JULY 6, 1953

NEWS ISSUE

Electrical World

Price 35 Cents

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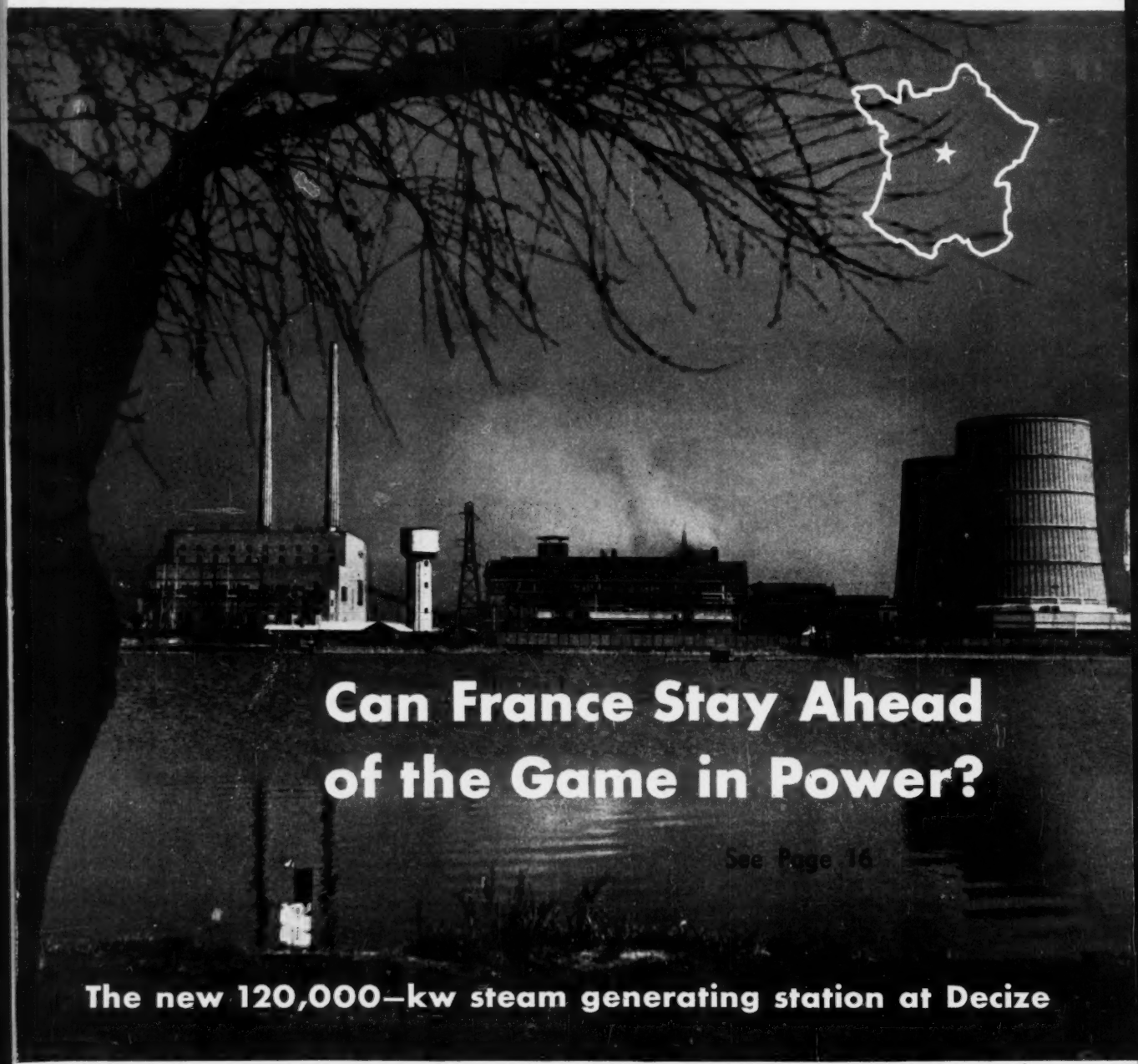


Can France Stay Ahead of the Game in Power?

See Page 16

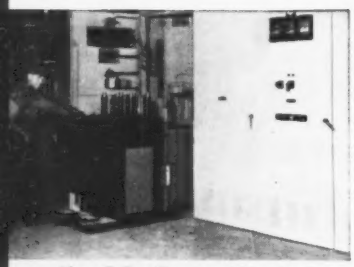
The new 120,000–kw steam generating station at Decize

Houston Lighting–Where Tomorrow Arrived Today . . . Page 22

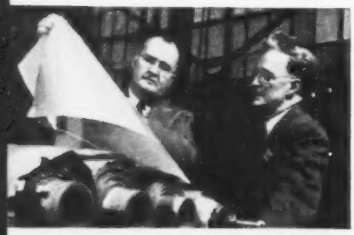
Central Shop for Transformer Repairs . . . Page 32

No flame is in contact with the insulation in this photo, but the old type held by N. Arone, Development Engineer, G-E Switchgear Laboratory Engineering Dept., continues to burn. The new flame-retardant insulation held by H. F. Hentschel, Mgr. Medium-voltage Switchgear Dept.—while charred—stopped burning as soon as flame was removed.

Self-extinguishing switchgear insulation—
NEWEST CONTRIBUTION TO SYSTEM CONTINUITY



New G-E self-extinguishing insulation barriers help protect the breaker in this metal-clad equipment.



Mica-mat, another significant G-E development, is now used in certain transformers and in traction motors.

The possibilities of insulation failure, however remote, are ever present in high-voltage electrical apparatus.

Abnormal conditions such as mechanical damage from external causes; subjection to short-circuit duty in excess of rating; excessive lightning surges on inadequately protected lines; all may cause insulation fires in electrical equipment.

A new laminated, flame-retardant insulation—developed at the G-E Switchgear Department in Philadelphia—is a further forward step towards minimizing potential fire hazards. This new insulation incorporates a self-extinguishing characteristic that refuses to sustain combustion. It will burn and char *only* if a source of flame remains in contact with the insulation itself. Once the source is removed, polyvinylchloride "smothers" the flame in less than a minute, localizing damage and permitting quick access to equipment for inspections and maintenance.

To the electric utilities concerned with the generation and distribution of increasingly larger blocks of power, insulation developments such as flame-retardant and mica-mat represent a means of providing even greater service continuity. The use of this new insulation in such apparatus as circuit breakers, metal-clad equipment, power transformers and similar vital apparatus will do much to eliminate equipment failure under abnormal conditions. General Electric Co., Schenectady 5, New York. 301-235

1878 75 1953 YEARS OF ELECTRICAL PROGRESS

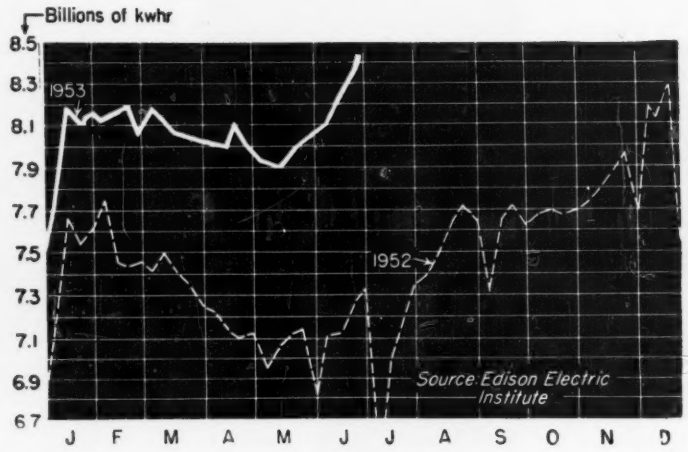
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 140, NO. 1

July 6, 1953

Electrical World



Output Week Ended June 27—8,446,193,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
June 27	+15.4	+16.3	+12.6	+20.3	+11.6	+17.3	+14.1	+10.8	+13.7	+11.8
June 20	+14.8	+15.1	+9.2	+20.6	+16.0	+18.7	+16.7	+7.7	+10.9	+7.4
June 13	+15.7	+15.3	+12.5	+21.0	+15.2	+19.1	+18.9	+6.1	+13.0	+5.6

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Apr.	72.9	73.5	65.4
Capacity (Million Kw)	Apr.	83.84	83.17	76.74
Production (Billions Kwhr)	Apr.	35.63	36.97	31.51
Hydro		9.70	10.20	9.96
Fuel		25.92	26.77	21.55
Fuel Consumption				
Coal (Million Tons)	Apr.	8.91	9.44	8.05
Oil (Million Barrels)		7.15	8.08	4.20
Gas (Billion Cu Ft)		76.58	70.16	66.50
Sales (Billion Kwhr)	Apr.	31.75	31.73	28.33
Residential		8.86	9.10	7.91
Commercial		5.15	5.18	4.74
Industrial		15.46	15.36	13.85
Other		2.28	2.09	1.83
Net Income Class A & B Companies ($ Million)	Mar.	90.61	98.39	84.32
Estimated Dec. '53 Peak (Million Kw)	Apr.	86.5	86.5	88.6
Kwhr per Residential Customer (12 Month Average)	Mar.	2,209	2,195	2,053
Revenue per Kwhr Residential Service (12 Month Average)	Mar.	2.76¢	2.76¢	2.79¢
Canadian Production (Billion Kwhr)	Apr.	5.75	5.78	5.03

Business Statistics

FRB Industrial Production Index†††	May	241*	240	211
Gross National Product Annual Rate ($ Billion)	4th Qtr.	355.2*	343.0	337.1
EW 5 Industry Production Index	May	129.6	130.2	116.0
ENR Construction Cost Index††	June	124.4	123.5	117.8
BLS Consumer's Price Index	Apr.	113.7	113.6	112.9
NEMA Insulation Materials Sales Index†	Apr.	694	694	545
NEMA Electric Appliance Sales Index†		317	356	211
NEMA Household Refrig. Sales Index†		188	211	133

*Preliminary **Revised †1936=100 ††1949=100 †††Unadjusted

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Electrical World
Vol. 140, No. 1
July 6, 1953

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 N. Broadway, Albany 1, N. Y. Executive, Editorial and Advertising Office: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publication Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

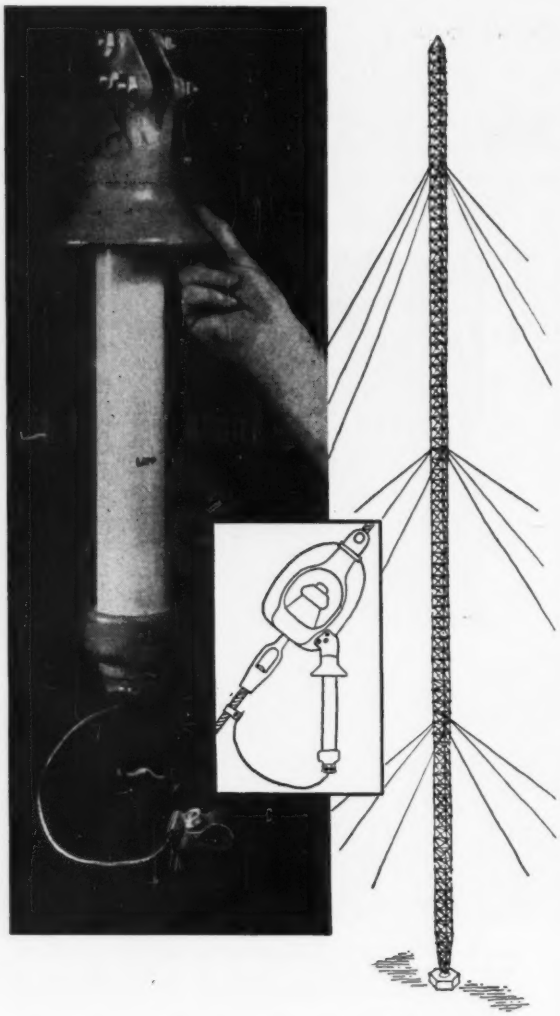
Subscriptions: Address correspondence to Electrical World—Subscription Service, 99-129 North Broadway, Albany 1, N. Y. or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are accepted only from executive, supervisory, and engineering personnel in electric utilities, manufacturing companies, and related fields. Position and company connection must be indicated on subscription orders.

Single copies 35¢. For the United States and possessions $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money, at par.) Other Western Hemisphere, $15 for one year, $25 for two years, $30 for three years. All other countries $25 for one year, $40 for two years, $50 for three years. Entered as second-class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in USA. Copyright 1953, by McGraw-Hill Publishing Company, Inc. Permission required to reproduce any of contents.

THE ELECTRICAL WEEK

THIS IS A PORCELAIN-HOUSED RESISTOR



From the earliest days of radio broadcast, a large proportion of all insulators used in antenna structures have been designed and made by Lapp. And the mechanical and electrical requirements of insulators for this duty have been among the most challenging and provocative in our considerable "specialty" experience.

Most of the higher-powered broadcast stations transmit from vertical radiators—steel towers—the tallest of which are guyed structures, resting on a single porcelain base insulator, and held by one or more sets of guy wires. The guying cables must be insulated from the tower, and also be broken into short sections. Lapp radio guy insulators—cast steel frames carrying porcelain compression cones and center-bolt to complete mechanical linkage—are used for this purpose.

Under certain operating conditions, flashover of these insulators occurred far too often. This was not due to excess voltage on the tower, to lightning, nor to leakage current. After considerable investigation, the mystery was solved—it appeared that an accumulation of static charge, built up on the insulated cable sections by wind or snow, finally reached arcover voltage. Radio frequency current followed the ionized path.

As so many times in the past, in the radio and electrical fields, the problem was assigned to Lapp. The device shown in the photograph proved to be a completely satisfactory solution. It is a porcelain tube, with caps which fasten to the frame of the guy insulator, and to the cable below. Inside the porcelain tube is a resistor of such value that it results in no appreciable loss of radio-frequency energy, but does permit a steady leak to ground of the static charges.

When you listen to your favorite radio station, you are probably benefiting by the better quality of reception and freedom of interruption made possible by this and other Lapp-engineered-and-built radio specialties. Just as customers of electrical utilities the world over are benefiting from the dependability of service made possible by Lapp-engineered-and-built porcelain for system equipment, and transmission and station insulation. Lapp Insulator Co., Inc., Le Roy, N.Y.

Lapp

THE ELECTRICAL WEEK

The Issue's New Highlights—Three-way battle for right to develop additional power at Niagara Falls is growing more intense. Representative Roosevelt asks for investigation of activities of five New York utilities in promoting their plan and backers of New York State proposal claim Administration support for their position.

National Hells Canyon Association is formed in Northwest to oppose Idaho Power's plan to develop Snake River. New group and eight PUD's ask permission to intervene in hearings before FPC . . . Senate approves more money for Corps of Engineers and Interior than House did.

BPA, California-Oregon Power jointly will complete 230-kv tie line . . . East Kentucky Rural Electric Cooperative gets PSC okay to build 597-mile transmission network.

Electric co-op leaders are rejoicing over their court victory upholding the legality of contracts between Missouri co-ops, SPA and REA. Clyde T. Ellis, executive manager of NRECA, called the court decision "The most heartening news which the leaders of the rural electrification program have heard in several years."

Massachusett's Governor Herter invokes Schlichter law to forestall a threatened strike by employees of Montaup Electric. Isadore Levin, Fall River attorney, is named moderator in dispute between managment and CIO union. Employees seek 20% pay raise, three weeks' vacation after ten years, and other benefits. Moderator has 15 days to persuade the two sides to arbitrate or settle their differences. State seizure impends 30 days later if disagreement continues.

Florida Power Corp placed No. 2 unit of 45,000-kw capability at Higgins plant on lines June 28 . . . Sherrill-Kenwood P&L gets New York State charter listing capital stock of $300,000 . . . Delaware's Representatives Walter J. Hoey (D), and Carey D. Sapp (R) introduce bill to amend present public service law by providing that when a utility comes before the board with a request for an increase in rates, all of the charges involved in an investigation of the need for the increase shall be borne by the utility.

Off the New England Wire—Cape & Vineyard Electric is employing aluminum primaries, secondaries, and services in order to avoid delays in supplying energy to a summer resort at Pocasset on Cape Cod . . . On the basis of TV sales in Greater Boston, as reported by Federal Reserve Bank, it is estimated about 70% of Boston Edison's residential customers are owners of TV sets.

Ohio PUC denies request of Toledo Edison, Cleveland Electric Illuminating, North American Coal Corp, Ohio Coal Association, and cities of Toledo and Cleveland for rehearing of PSC's decision granting a 12% freight rate increase to coal haulers . . . Pennsylvania Electric asks SEC and PUC approval to acquire Northern Pennsylvania Power, both subsidiaries of General Public Utilities . . . Public Service E&G (Newark, N. J.) is celebrating its 50th anniversary this year.

Off the Washington Wire—Republican power policy will be a major issue in next year's Congressional campaigns if Democrats have their way. Democratic lawmakers are already filling the Congressional Record with attacks on GOP actions in the power field. Democratic National Committee is circulating a "fact sheet" entitled "Republican Dim Out of Public Power." It hits at reduced government spending for power facilities and at GOP interpretation of preference clause.

REA approves $7.5 million loan to Loup River Public Power District in Nebraska, largest single loan since the Republicans assumed command of agency. This loan, along with funds from previous loans, will enable the district to build 242 miles of 115-kv transmission line.

W. C. Wise steps out as Deputy REA Administrator July 11. He was appointed by former REA Administrator Wickard . . . White House is still wavering on appointment of M. C. Nichols as Reclamation commissioner. Demands by Nichols and his supporters for action brought no immediate response. Holdup is traced to Nichols' connections with a government committee which selected a firm to operate a nickel-producing plant in Cuba.

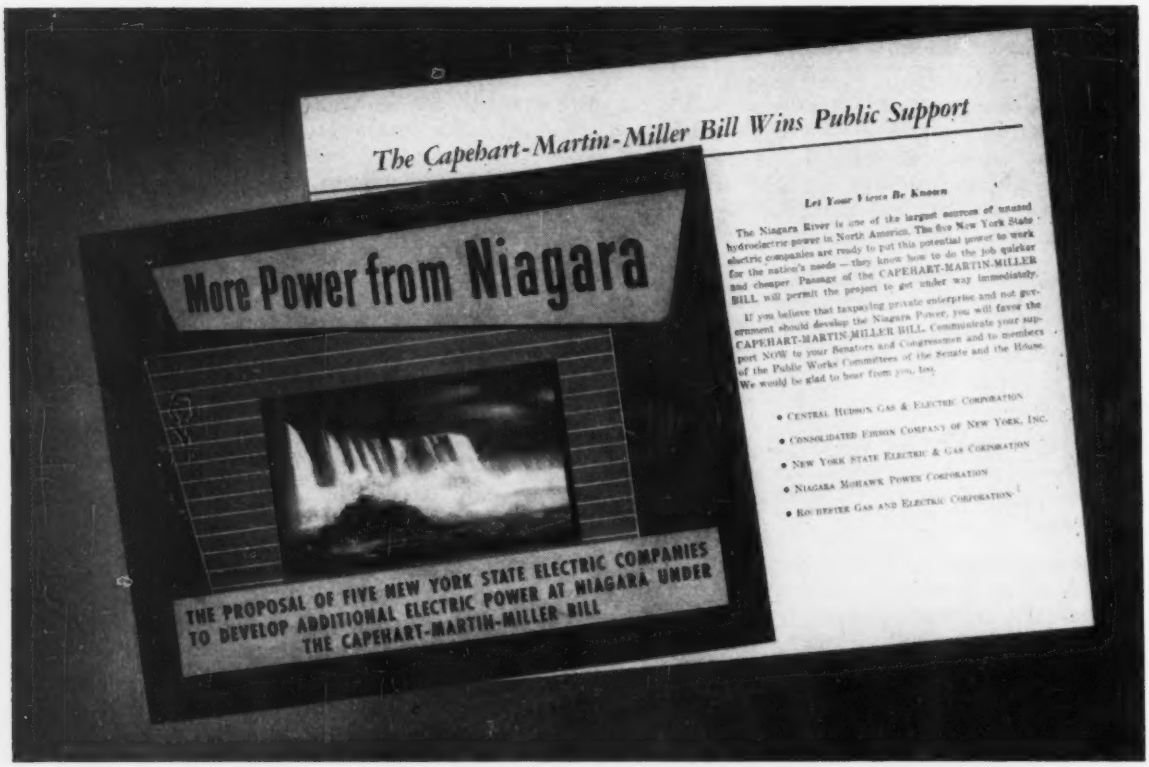
Without fanfare, Depa closed down last week. Controlled Material Allotments for Priority (E-5) Generating Projects will be made by Interior Department. Queries regarding allotment requests, directives, and other matters pertaining to the power expansion program should now be addressed to Assistant Secretary for Water & Power, Department of Interior, Washington 25, D. C.

Recent thunderstorm and heat in New York upped Con Edison's load to 2,770,000 kw, only 54,000 kw, or less than 2%, from peak established in winter of 1952-53.

Congratulations—George M. Gadsby, president and general manager of Utah P&L, is named board chairman to replace Lafayette Hanchett, who has retired. Though Gadsby retains presidency he relinquishes post of general manager to E. M. Naughton, former assistant general manager who is also elected a vice president . . . V. P. Gaffine leaves post of senior vice president with Cleveland Cliffs Iron Co to become president of that firm's subsidiary, Cliffs P&L, Ishpeming, Mich . . . United Gas Improvement promotes Martin H. Parkinson from vice president and comptroller to executive vice president, and makes E. H. Smoker a vice president succeeding F. B. Hofft, retired . . . Canadian Electric Association's new president is Charles I. Bacon, vice president and general manager, Cornwall Street Railway L&P Co, . . . J. H. Dyett is Rome Cable Corp's newly elected executive vice president . . . A. H. Manwaring, executive vice president, Philadelphia Electrical & Manufacturing Co, is elected president of Illuminating Engineering Society . . . International Power Co, elects Vice Pres Frederick Krug president to succeed I. W. Killam, who will remain a director.

Obituary—Ben Hughes, 55, president and co-founder of Hughes Bros, Seward, Neb., died June 23.

(*Continued on page* 10)


The Capehart-Martin-Miller Bill Wins Public Support
Let Your Views Be Known
The Niagara River is one of the largest sources of untamed hydroelectric power in North America. The five New York State electric companies are ready to put this potential power to work for the nation's needs — they know how to do the job quicker and cheaper. Passage of the CAPEHART-MARTIN-MILLER BILL will permit the project to get under way immediately.
If you believe that harnessing private enterprise and not government should develop the Niagara Power, you will favor the CAPEHART-MARTIN-MILLER BILL. Communicate your support NOW to your Senators and Congressmen and to members of the Public Works Committees of the Senate and the House. We would be glad to hear from you, too.
• Central Hudson Gas & Electric Corporation
• Consolidated Edison Company of New York, Inc.
• New York State Electric & Gas Corporation
• Niagara Mohawk Power Corporation
• Rochester Gas and Electric Corporation
More Power from Niagara
THE PROPOSAL OF FIVE NEW YORK STATE ELECTRIC COMPANIES TO DEVELOP ADDITIONAL ELECTRIC POWER AT NIAGARA UNDER THE CAPEHART-MARTIN-MILLER BILL

BOOKLET put out by five utilities on their plan for developing power at Niagara Falls figures in charges made by Roosevelt

Battle Over Niagara Grows Hotter

Opponents of the private enterprise plan to develop additional electric power at Niagara Falls have ganged up in an attempt to thwart House consideration this year.

As soon as the plan gained endorsement of the House Public Works Committee (EW, June 29, p 71), it became the prime target of those backing either state or federal development of the Niagara power.

Last week, opponents were attacking on two fronts:

• A New York Congressman backing federal development called for widespread investigations of the activities of the five electric companies seeking to build and operate the Niagara project. Democratic Rep Franklin D. Roosevelt, Jr, asked federal agencies to look into lobbying and public relation activities of the companies for possible illegality.

• Backers of state development trotted out a second letter from the Eisenhower Administration opposing the bill which would permit private development of the Niagara power. The Budget Bureau letter recommended instead that the matter be left up to Federal Power Commission, which is required by law to give preferred consideration to a state application.

Roosevelt's Charges . . . Roosevelt charged that the five New York electric companies seeking to develop an additional 1.1 million kw of Niagara power have been conducting a "concerted propaganda campaign" for the purpose of securing Congressional approval of their plan. He pointed to use of pamphlets and a television program designed to gain support for legislation favoring the companies' development. Five companies are Consolidated Edison, Central Hudson Gas & Electric, Rochester Gas & Electric, Niagara Mohawk Power, and New York State Electric & Gas.

While he did not refer to it specifically, Roosevelt had in mind the booklet "More Power from Niagara" sponsored by the five major New York electric companies. He did single out advertising on the TV show "You Are There" carried over the Columbia Broadcasting System June 7.

Inquiry Asked . . . In a letter to Attorney General Herbert Brownell, Jr, Roosevelt said, "Upon preliminary investigation, I find that there is no registration by any of these companies or their representatives under the federal regulation of Lobbying Act and I also wonder about their use of corporate funds in relation to the Federal Corrupt Practices Act."

In a companion letter to Internal Revenue Commissioner T. Coleman Andrews, Roosevelt asked ". . . whether it would be your view that expenses directed toward the influencing of legislation before the Congress may also be considered a proper operating expense deductible from the gross income for tax purposes."

From CBS, Roosevelt asked for "equivalent television facilities by

which I can expound the contrary arguments in order that the public may be fully informed." Federal Communications Commission has promised to consider the request of the New York congressman.

Utilities' Views . . . In commenting on the statements made by Roosevelt, Alexander M. Beebee, president, Rochester G&E, declared, ". . . it is perfectly true that we have circulated material among our customers and others in support of private enterprise being allowed to carry out the development in Niagara Falls. We feel it is a sorry day in America if groups widely affected by proposed legislation cannot bring the facts involved to the attention of the public. We are proud of every step we have taken in supporting private enterprise in America."

Ernest R. Acker, president, Central Hudson G&E, expressed similar views. He denied that the five New York utilities had acted improperly and said he thought they had a perfect right to support private enterprise. He added, "We welcome any inquiry that anyone wants to make."

Consolidated Edison issued the following statement: "Con Edison, together with four other major electric companies of New York State, has sent out information as to their proposal to develop additional hydroelectric capacity at Niagara Falls.

"In doing so, Con Edison is entirely within its rights.

"There may well be a question, however, as to the propriety of public officials disseminating propaganda at the expense of the taxpayers."

State Plan . . . Proponents of state development relied on the Eisenhower Administration for support. They circulated a second letter from the Budget Bureau last week expressing the official views of the Administration.

This letter opposed provisions of all three bills before Congress relating to Niagara. One of the bills—the one approved by the House committee—would provide for development by the five companies. A second bill would provide for state development and a third, for federal development.

Effect of the Eisenhower recommendation would be to give the state preference in building and operating the additional Niagara power project. Specifically the Budget Bureau urged that the whole matter be put before FPC for a decision.

Hells Canyon Advocates Unite

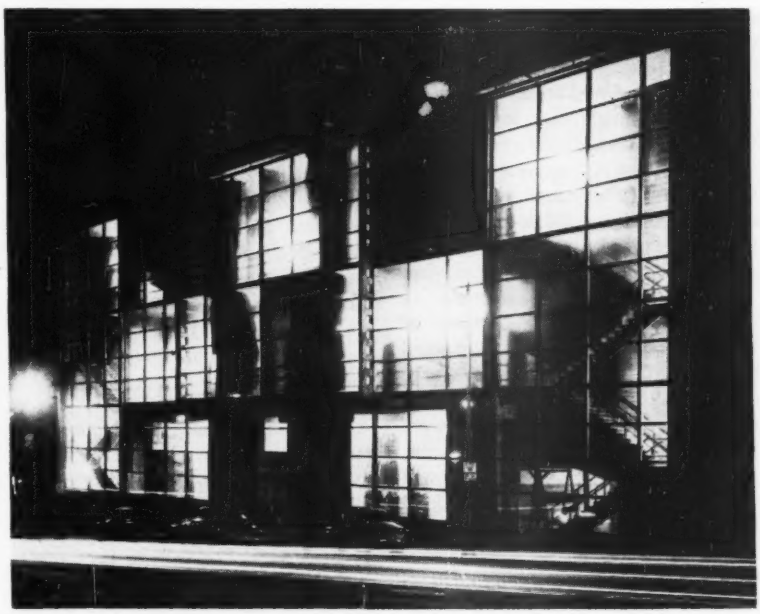
Association formed in opposition to Idaho Power's Snake River plan. Petitions to intervene at FPC hearings filed

Applications were filed with Federal Power Commission June 26 by the newly formed National Hells Canyon Association and eight Washington PUD's to intervene at hearings on Idaho Power Co's plans for development of the Snake River. Hearings are scheduled to begin July 7.

James T. Marr, president of NHCA which represents 15 associations and is spearheading the drive against Idaho Power's plan, declared: "Should the applications of Idaho Power Co be granted, such grants will prevent and forever impede full and complete utilization of the resources of the Snake River for the benefit of all of the people of the Northwest. Withdrawal of the Interior Department left the cause of multipurpose river development without a friend in court. The Hells Canyon Association and other groups will present the people's case at the hearings."

Petition of the PUD's declares, "The applications of the Idaho Power Co are not well adapted to conserve and utilize in the public interest the water resources of the region." Listed in the PUD intervention petition were: Lewis County PUD, Klickitat No. 1, Benton, Clark, Skamania No. 1, Pacific No. 2, Mason No. 3, and Franklin No. 1.

Officers . . . In addition to Marr, who is executive secretary of Oregon State Federation of Labor, NHCA elected the following officers: Vice president, Vincent Cleaveland, manager of Clark County (Wash.) PUD; Secretary treasurer, Elmer McClure, Oregon State Grange Master.



BCE Opens Showcase Substation

British Columbia Electric Co has opened a $2-million showcase substation in downtown Vancouver. The substation, named Dal Grauer, after the company's president, has concrete sides and rear, and an all-glass front. The glass front permits passersby to see control rooms and equipment on three floors. The station is operating initially with two 25,000-kva transformers but is designed for an ultimate 100,000-kva capacity.

Member organizations of NHCA are Oregon State Federation of Labor, AFL; Washington PUD Association; Idaho-Oregon Hells Canyon Association; Oregon State Grange; Montana Rural Electrification Cooperative Association; Idaho Rural Electric Cooperative, Inc; Washington State Grange; Columbia River Development League; Washington State Federation of Labor, AFL; Oregon State Industrial Union Council, CIO; Northwest Public Power Association; Oregon Farmers Union; Idaho State Federation of Labor, AFL; Baker County (Ore.) Commercial Club, Oregon State Building-Construction Trades Council; and Idaho Development Association.

While officers and directors of the new organization were being elected at Portland June 23 there was evidence that supporting PUD's of Washington and Oregon may move toward joint proposals to take over construction of big multipurpose Columbia River dams that are being delayed for lack of Congressional approval of funds. In one of its first resolutions, the new association urged the public distribution systems to pool their financial resources for regional river developments to protect potential hydroelectric supplies of the future.

Joint Action Considered . . . Since May several of the organizations had held membership conventions where delegates endorsed proposals for full cooperation with any organized opposition to Idaho Power's plans for the Snake River's Hells Canyon area and advocacy of one huge multipurpose structure as originally proposed by the Bureau of Reclamation. Marr had keynoted Oregon AFL policy favoring one large dam and also, in a moment of partisan enthusiasm, revealed the PUD's were talking of joint efforts toward continuing the large dam programs if Congress balked at committing federal funds for this purpose.

The same day the new association was created, Cowlitz, Clark, and Benton PUD officials met in Longview, Wash., that night to review proposals that they pool their resources to build major Columbia dams, perhaps Hells Canyon. A few days earlier, Cowlitz PUD chairman Earl J. Cole admitted he had talked with Grant County PUD Attorney Nat Washington on the subject of Cowlitz joining Grant in building the Priest Rapids Dam.

CLAUDE L. DRAPER

Gets FPC Post

Claude L. Draper, 77-year-old dean of the Federal Power Commission, is new vice chairman. He has been a member of FPC since 1930 and has twice before held the position of vice chairman. He succeeds former Commissioner Harrington Wimberly whose term expired June 22, leaving one vacancy on the 5-man FPC.

POWER BRIEFS

• Westinghouse Electric Corp has been employed by the government of Guatemala to make a complete survey and recommendations regarding a proposed $5-million, 30,000-kw hydroelectric project on Guatemala's Pacific coastal slope near the town of Jurun. Survey is to be completed in six months. The plant will serve the state of Esquintla and Guatemala City.

• National Science Foundation last month announced a grant of $6,000 to the University of Wisconsin, for joint support of a scientific conference on solar energy and its utilization to be held Sept. 12-14. The conference will bring together about 30 physical scientists and engineers from the United States and abroad to assess present knowledge of solar energy utilization and to point out needed areas for basic research in the physical and engineering sciences.

• When current construction is completed in six or seven years, output of electricity in Sweden will jump from 20 billion to 33½ billion kwhr. Of last year's production, 9 billion kwhr was generated by publicly owned power stations, 10 billion by private companies, and 1 billion by municipal plants.

Economic Reactors

They'll be on the line in less than ten years, Dean tells Joint Congressional Committee

Economic electric power will be produced from atomic reactors "in a very few years—certainly less than ten."

That's the personal guess of Gordon Dean, who quit as chairman of the Atomic Energy Commission this week. He presented this view at the request of members of the Joint Congressional Committee on Atomic Energy last week as the committee started open hearings on possible changes in the Atomic Energy (McMahon) Act of 1946.

The committee, which previously had conducted hearings behind closed doors for several weeks, has scheduled open hearings throughout July, averaging three sessions every week. During this period Lewis L. Strauss, who has been named by President Eisenhower to succeed Dean as AEC chairman, will put in an appearance.

Urge Industry Role . . . Under Secretary of State Walter Bedell Smith, Interior Secretary Douglas McKay and Under Secretary of Commerce Walter Williams urged early participation of private industry in the development of atomic power. Robert LeBaron, special assistant to Defense Secretary Charles Wilson, went along with this view generally, but urged that adequate safeguards be established to assure the armed forces of all the fissionable materials they would require for weapons.

Rep W. Sterling Cole, chairman of the joint committee, announced that Congress would not act before next year on changes in the McMahon Act proposed by the AEC to permit private participation in atomic power development. The Budget Bureau, acting as spokesman for the Eisenhower Administration, has advised Cole it would take that long to iron out recommendations for private patents in the atomic power field.

Senate Increases Funds for Power

Upper chamber votes more money for Interior, Corps of Engineers than House did. Bills go to conference group

Democrats marked for future reference the cuts made by Republicans in the federal power budget as bills carrying the bulk of these funds cleared the Senate.

On the two big bills involving money for power projects, the Senate voted to increase funds for both the Army Engineers and Interior Department agencies over House-approved figures. However construction items in these bills were some 25% under the old Truman budget, and around 5% less than the Eisenhower budget.

For construction of Army multipurpose projects the Senate voted $227.3 million compared with the House figure of $194.7. Bureau of Reclamation, an Interior agency, was voted $123.6 million for construction against a House-approved figure of $108.4. The Senate voted similar increases for Southwestern and Bonneville Power Administrations.

Both these bills were headed for House-Senate conference committees last week where the differences are to be ironed out.

Still to be voted on by the Senate are fiscal 1954 funds for Tennessee Valley Authority power facilities. TVA proponents are putting on an all-out fight to restore a portion of the $61-million cut made in the TVA budget by the new Administration.

Army Engineer Projects

Democratic Sen Warren G. Magnuson of Washington singled out the Republican "no new starts" policy in leading debate for an increase in the Army Engineers funds bill.

The Washington senator charged the Eisenhower Administration had "scuttled every proposal to go ahead with the comprehensive development of the Columbia River."

This attack set the general theme for other Democrats and for independent Sen Wayne Morse in criticizing Republican power policy.

In approving the funds bill, the Senate voted to restore $3.5 million for the controversial Table Rock multipurpose project in Missouri.

The Senate voted to increase funds for nine other power projects in the Corps of Engineers bill, and to decrease funds for two (See table).

Power for TVA

At Senate subcommittee hearings, representatives of four electric companies interconnected with TVA offered to furnish the additional power to TVA under long-term contracts.

The offer was made by Philip Sporn of American Gas & Electric Co, Louis V. Sutton of Carolina Power & Light Co, R. B. Wilson of Mississippi Power & Light Co, and J. M. Barry of the Southern Co.

Energy offered by the electric companies would supposedly replace power which TVA had planned to generate from new government-financed projects.

Spokesmen for the electric companies declined to make a firm offer as to rates, but all said TVA power requirements could be met at reasonable rates under long-term pacts.

TVA witnesses sought to combat these offers with charges that the federal agency had a utility responsibility to meet the needs of its customers, and Congress is honor-bound to provide funds to meet this responsibility.

Interior Appropriations Bill

Interior Appropriations bill, which usually draws heated debate, went through the Senate without a hitch.

With the exception of the Southeastern Power Administration, the Senate added sizeable amounts to funds recommended by the House for Interior power activities (See table).

Besides partially restoring the Southwestern Power Administration continuing fund, the Senate also provided planning funds for the controversial Jamestown-Fargo 230-kv transmission line in southwestern Minnesota.

The Senate bill also would permit Interior to sell the partially completed Clark Hill-Greenwood (S. C.) transmission line to a local agency.

Senate-House Differences on Power Funds Bills

Army Corps of Engineers—Multipurpose Projects

Project (State)	House Approves (Millions of dollars)	Senate Approves (Millions of dollars)
Blakely Mountain (Ark.)	5.5	5.2
Folsom (Calif.)	8.0	9.0
Jim Woodruff (Fla.)	7.0	7.5
Buford (Ga.)	5.0	8.0
Albeni Falls	6.0	6.8
Table Rock (Mo.)	0.0	3.5
Gavins Point (Neb.)	10.0	11.2
Garrison (N. D.)	27.0	29.0
McNary Lock and Dam (Ore.)	25.0	27.7
The Dalles (Ore.)	29.3	34.0
Fort Randall (S. D.)	11.0	13.6
Cheatham Lock and Dam (Tenn.)	3.0	4.0
Old Hickory (Tenn.)	12.6	11.9

Interior Department—Power Budget

Agency—Function	House Approves (Millions of dollars)	Senate Approves (Millions of dollars)
Reclamation Bureau		
Eklutna Project (Alaska)	0.0	8.5
Davis Dam (Ariz.-Nev.)	3.4	4.2
Central Valley Project (Calif.)	23.4	24.2
Palisades (Idaho)	16.2	17.6
Columbia Basin (Wash.-Ore.)	20.4	20.6
Missouri River Basin Project	49.5	59.1
Bonneville Power Administration		
Construction	38.3	44.2
Operation and Maintenance	5.0	7.1
Southwestern Power Administration		
Continuing fund	.1	2.0
Operations and maintenance	1.5	1.7

THE ELECTRICAL WEEK

CONTINUED

Senate Appropriations Committee in report to Senate made these policy recommendations: (1) USBR wherever possible should secure wheeling contracts rather than build transmission lines; (2) Power sales contracts should be carried out "until and unless they are found invalid"; and (3) BPA has authority to absorb a portion of the cost of abnormal steam generation in the area during critical water years and these costs should be borne by publicly owned utilities as well as electric companies . . . Puget Sound P&L's Pres Frank McLaughlin joins with the cities of Tacoma and Seattle in opposing the proposed 20-year contract of Bonneville Power Administration with Portland General Electric.

American P&L directorate sets July 22 as effective date for dissolution under the Public Utility Holding Co Act of 1935 . . . President Eisenhower nominates Whitly P. McCoy, University of Alabama law professor, to be director of Federal Mediation and Conciliation Service. . . . Gregory Hankin, Interior lawyer in Roanoke Rapids case, is no longer with the department.

Members of General Service Administration's special interagency committee to oversee distribution of primary aluminum to non-integrated fabricators are: F. W. Witt, GSA's emergency procurement service, chairman; A. A. Snow, NPA's aluminum division; G. F. Dudik, ODM; and E. M. Holland, GSA's office of general counsel.

IN THE INDUSTRY

Electrical World finds conditions in the appliance industry no better on the West Coast than in the East. Here's what the publisher had to report on a recent trip to several western states:

Despite the assertions of appliance manufacturers that production is holding up, that sales are being maintained and that there is no danger in sight, the retail and wholesale ends of the appliance business are not so confident. Throughout the country most major appliances are being sold at less than list and wholesalers and retailers are being squeezed into uncomfortable positions.

Appliance Sales Below List Prices . . . One major appliance manufacturer estimated that upwards of 85% of the white goods sales in the New York metropolitan areas are made at below list prices. This condition is found in other eastern and mid-western urban areas, with the largest discount operation in the country, and perhaps the largest volume of appliance sales in Chicago.

On the Pacific Coast, in Los Angeles, San Francisco and Seattle, conditions are no better, might be a bit worse. Retailers in the Los Angeles metropolitan area complain that their showrooms are nothing but shopping rooms for customers who then purchase their appliances through discount houses or bargain for discounts . . . which they get.

There are at least 25 discount operations thriving in the San Francisco area, and the opinion in Seattle is that no dealer is selling a major appliance at list price.

One of the interesting conditions found on the West Coast is the rapid growth of employee cooperative discount operations. Such large industrial employers as United Air Lines have such operations which purchase almost any type of domestic requirement for members.

Cut Price Operators . . . Many cut price operators work very hard on a possible purchaser to find some reason for offering him a discount. For example, an average citizen walking into one of these operations will be asked what organization he belongs to, what company he works for or what person he might know, who are on an approved list for the maximum discount allowable. Many of these operations sell at no more than 5% above dealer cost, and some have been known to undersell dealer cost.

During the first quarter of 1953 bankruptcy in the appliance retail classification was equal to total bankruptcy in this classification during 1952. Obviously many dealers are broke but do not yet know it. Indications are that appliance distributors are either losing money or barely breaking even at the present time.

The only conclusion which may logically be drawn is that "wash out" of retailers will continue until the situation becomes so acute as to force salutary revision of appliance distribution practices or, possible, an entirely new pattern of flow goods from manufacturer to purchaser.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Capacitor kilovar output varies as the square of the applied voltage. Thus, in times of low voltage, when more kilovar output is desirable, less is provided.

Switched capacitors can be utilized in the larger substations and are preferable in general to the synchronous condensers that formerly supplied the corrective kilovars.

Power transformers have been improved in reliability through establishment of coordinated basic insulation levels and impulse testing to the point where failures are practically non-existent.

Steel grilling around a reactor got hot but the aluminum grill that replaced it did not. Steel is magnetic, aluminum not.

Cumulative demand register adoption seems to hinge on measuring the added cost against the value of reducing customer complaints.

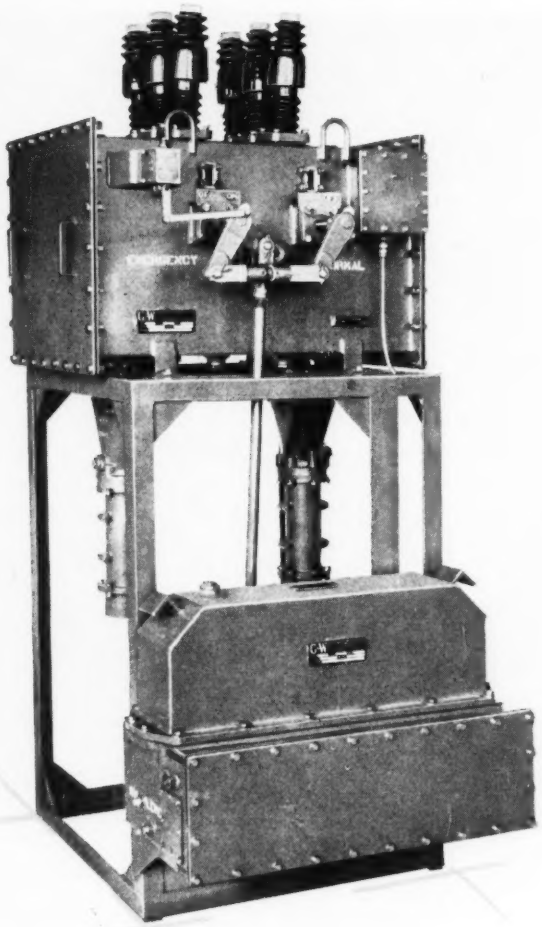
Modified proportions to achieve different relations of core and copper loss is said by transformer designers not to be a critical factor hampering the designer.

Selenium in crystalline gray form has conductivity 10^{-10} times that of good metallic conductors but even that is 10^{10} times as good as in its monoclinic (red) form. Fair doubt whether selenium is a conductor or an insulator.

Specific absorption or discharge of dry generator insulation is high when the insulation is new and mechanically tough and low when the insulation is deteriorated and brittle.

Beware the aiming of substation transformer pressure relief vent, lest a transformer failure spray burning oil over tops of fire walls onto other equipment.

PROVIDE SERVICE CONTINUITY BY AUTOMATICALLY TRANSFERRING LOAD TO AN ALTERNATE FEEDER

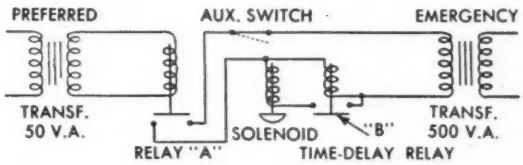


"RA" OIL SWITCHES

The unit illustrated has two "RA" single throw oil switches for the preferred and emergency feeders which are terminated in the bottom cableheads. The load is connected in parallel to the two sets of porcelain enclosed disconnects on top. Either switch can be isolated.

Alternate units with "RAD" double throw oil switches with or without air-break isolating links are also available.

MODEL "E" MECHANISM



The load is automatically thrown from preferred to emergency feeder when preferred feeder voltage fails. The load is automatically thrown back from emergency to preferred feeder when preferred feeder voltage is restored (for a period of 2½ minutes). There is no "hunting" on system disturbances. Load cannot be thrown to a "dead" source.

Control transformers are located in the oil switch tanks. All control wiring is done at the factory.

Installation of the unit merely involves termination of feed and load cables.

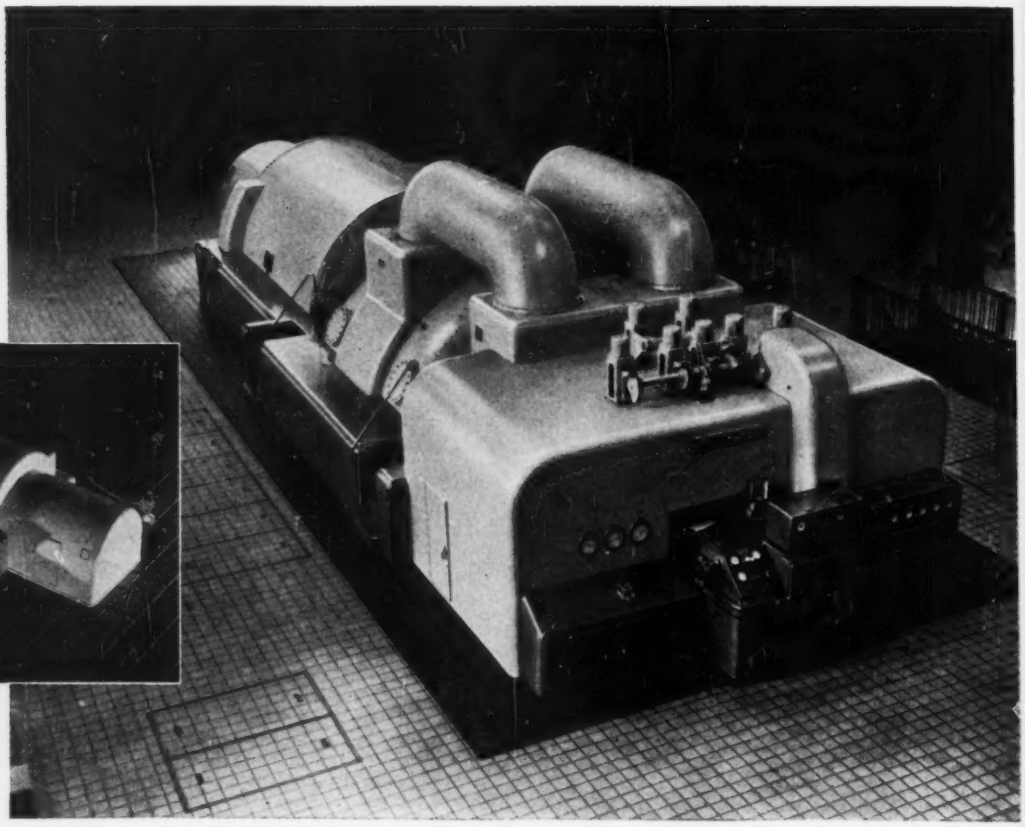
Write us or our representatives for Bulletin DA 50. Send cable data and describe installation conditions for quotation on automatic transfer oil switches to meet your requirements.

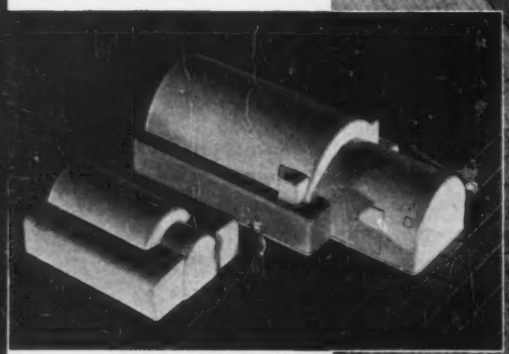
D-532

G-W ELECTRIC SPECIALTY CO.
7780 Dante Avenue, Chicago 19, Ill.
Cable Terminating, Connecting and Sectionalizing Devices
Representatives in principal cities of U. S. A.
In Canada—Powerlite Devices, Ltd., Toronto and Montreal

Major Developments

At right: World's first *supercharged* hydrogen-cooled turbine generator — with direct rotor conductor cooling — installed at the Wisconsin Power and Light Company's Edgewater Station in 1951.





Above: Relative size of fully *supercharged* and standard hydrogen-cooled generators of the same kw rating.

Operation-Proved Supercharged Generator

Availability — 100%. On-the-line service factor — 97.41%. That summarizes the performance of the world's first *supercharged* hydrogen-cooled turbine-generator unit during its first full calendar year of operation.

By cutting generator size, *supercharged* direct conductor cooling permits smaller plant size, less expensive foundations, and smaller breakers and bus structures; minimizes mechanical design limitations; raises possible maximum ratings, and reduces field assembly problems.

That these advantages are obtainable has been proved in operation.

As a result, Allis-Chalmers is now building a completely *supercharged* generator resulting in the size reduction shown in the small illustration at left above.

A-4089

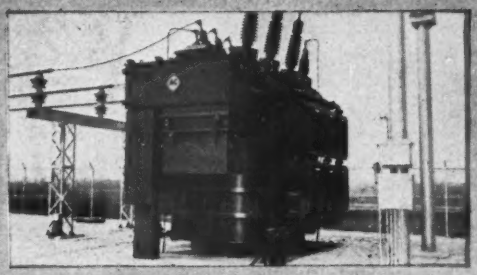
Equipment for Power: Water Conditioning equipment, chemicals and service . . . Steam and Hydraulic Turbines . . . Generators . . . Condensers . . . Steam Jet Air Ejectors . . . Power Plant Pumps and Motors . . . Transformers . . . Circuit Breakers . . . Switchboards and Control . . . Switchgear . . . Unit Substations . . . Utilization equipment.

ALLIS-

in Power Equipment

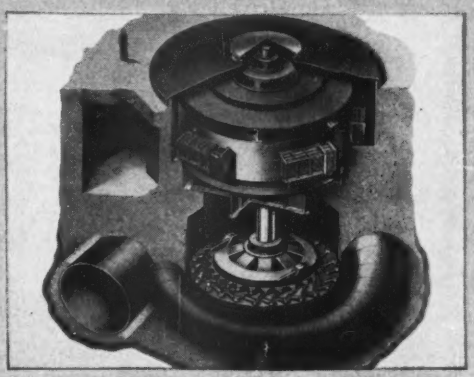
Corona-Free Power Transformers

Because Allis-Chalmers is building transformers rated 220,000 kva and others for 330,000-volt transmission, you can depend on A-C for units engineered to meet any application requirements. To check insulation aging, A-C transformers are designed to be corona-free even at highest test voltages. Without corona, transformers stay young, since repeated voltage stresses do not cause progressive deterioration of the insulation.



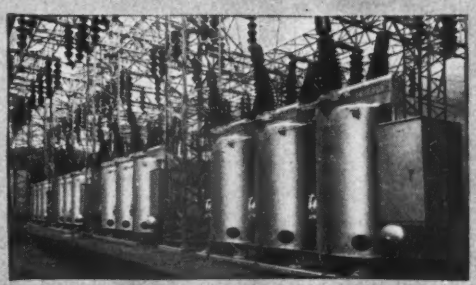
Reversible Pump-Turbine Units

Pioneered by Allis-Chalmers, reversible pump-turbines can solve some troublesome peak load problems. They do this by reducing the amount of equipment formerly needed for pumped storage operation; the single unit operates alternately as a turbine-generator and as a motor-driven pump. Five units are now in production, with turbine ratings ranging from 12,650 to 120,000 hp. The latter unit will combine the world's largest motor, with a rating of 102,000 hp, and the largest Francis turbine ever built.



High Speed Circuit Breakers

As power systems grow, A-C circuit breakers keep pace with the new demands for size, speed and reliability. Mechanically trip-free pneumatic operators, originated by A-C in 1937, are in service on 20-20-20 cycle repetitive reclosing 3-cycle breakers. Now, hydraulic accumulator principles have been combined with proven pneumatic operation to produce the *Pneu-Draulic* operator and set new standards for large power circuit breaker speed and reliability.



Multi-Steam-Path Condensers

Allis-Chalmers is supplying six 100,000 sq ft surface condensers for the 2,200,000 kw of added private utility capacity being provided for AEC's Ohio diffusion plant. A-C multi-steam-path condensers have consistently helped to cut power costs. With 60 years of experience building over 13,000,000 sq ft of condenser capacity, A-C has the proven engineering and manufacturing facilities to build the largest condensers that might be required.

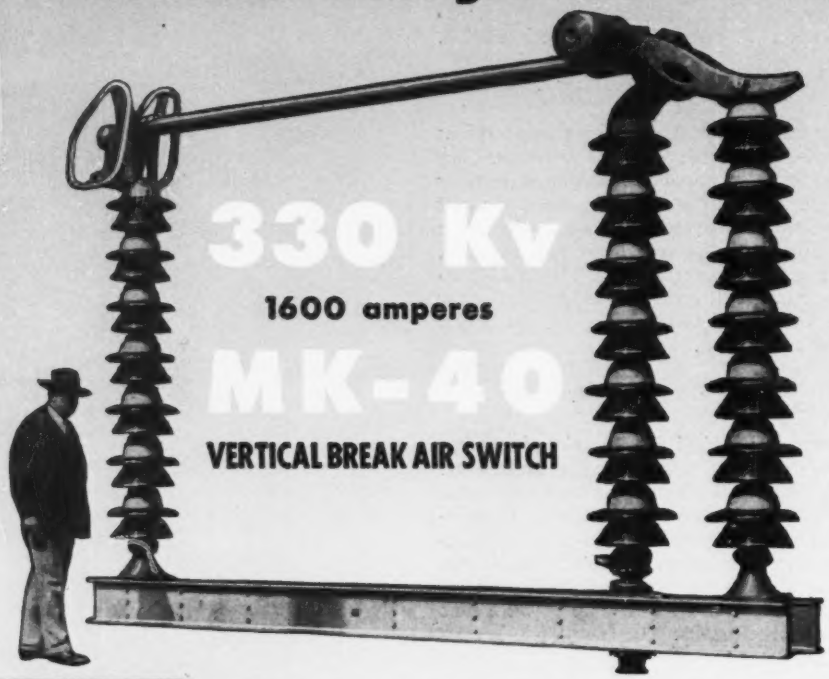
Pneu-Draulic is an Allis-Chalmers trademark.

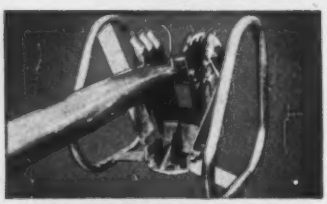
CHALMERS

A-C ALLIS-CHALMERS

For more information, contact your nearby A-C representative, or write Allis-Chalmers, Milwaukee 1, Wis.

1ST DELTA-STAR reports that the First 330 Kv switches are now being installed . . .





Again, final testing has proved the correctness of design and construction of the first commercially produced 330 Kv Vertical Break Air Switches in the U.S.A. These massive Delta-Star switches are now being installed with the positive assurance that they are more than adequate for the service they are designed to perform.

Another "first" has again been added to Delta-Star's quarter-century record of constant research and development in the manufacture of high voltage switching equipment incorporating the latest and most refined improvements. Look to Delta-Star for all your switching equipment requirements from 7.5 Kv to super-high voltages.

WHEN YOU WANT THE BEST IN HIGH VOLTAGE SWITCHING EQUIPMENT, SPECIFY DELTA-STAR

DELTA-STAR ELECTRIC DIVISION

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H. K. PORTER COMPANY, INC.

Learn from U. S., Britain Told

Electrical Power Convention hears report that industrial use of power is much higher in America than in England

The official theme of the fifth British Electrical Power Convention was "Electricity and National Prosperity," but in practice it resolved itself into "Wake up, Britain!—and learn from the U. S. A."

About 1,500 persons representing the nationalized utilities, manufacturers, consultants and labor relations bodies attended the meeting held June 8-12 at Torquay.

Industrial Use . . . A paper from E. R. Wilkinson, commercial manager to the British Electricity Authority, set the ball rolling. Referring to the great disparity between the electrical horsepower at the elbow of the American worker and that available to his British counterpart, he said, "The relative position has not improved but rather worsened, since before the war. Prewar, each U. S. operative had about 2½ times more power than the British workman; now, it is about 3 times as much as in Britain." Nor did he find signs of any improvement in the relative situation in the immediate future. "Industrial re-equipment is too slow," continued Wilkinson. In a group of seven European countries, he found an average expenditure of about 23% of their national income on industrial re-equipment while in Britain the figure was only 14%.

Britain spends about 7% of total capital expenditure (on all industry) on new electric plants; average in the seven other countries is 9%.

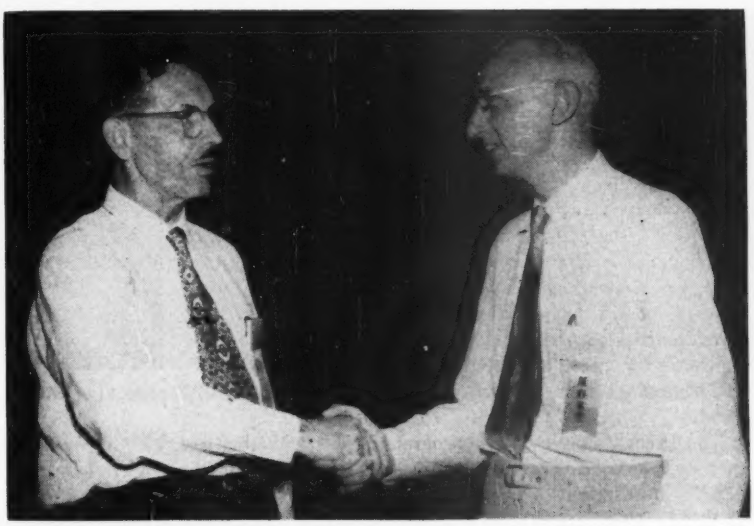
No Discussion of U. S. Report . . . Surprise of the convention was the absence of discussion on the recently published report by the United States Productivity Team dealing with the British electricity system. This survey, made by a 17-man team headed by Chandler W. Jones, vice president, Narragansett Electric Co, Providence, R. I., found much to praise in British practice. Its major criticism included the smallness of generating units, slowness of procedures for obtaining approvals on new sites for steam power plants, and the lack of capital allocation for rural development. Better education of trade union members on the need for increased productivity and liberalizing of the concepts of equipment loadings were suggested in the report.

Few engineers, of high or intermediate executive level, had read the report. Official comment was lacking. Informal comment ran like this: "We envy the Americans their enormous home market for power and for electrical apparatus. If we had the same conditions here, we could design and build power plants at least as efficient as any in America."

Rural Electrification . . . In a paper on electricity for agriculture, C. A. Cameron Brown made these points: Promotional and competitive tariffs were needed to bring in a wide field of marginal but high-yielding applications, means must be found to combat the ever-increasing cost of electrical equipment for farm use.

South Western Area Electricity Board Chairman S. F. Steward said that while there had been a great improvement in the annual rate of connecting up farm premises in all parts of Britain in the last few years, there would soon come the problem of the fringe areas where the cost of overhead line and transformer equipment would always be too great, in comparison with revenue, to justify economic public supply. If in the interest of higher food production, and of amenities to hold farm labor from commuting to urban industry, it was thought necessary to give a supply from public mains, then, he thought, it was a case for government subsidy.

Many of the speakers resisted this suggestion. "Subsidies bring strings—and we have enough strings tying up electricity supply already," they said.



ASEE President Is Congratulated

Dean W. R. Woolrich, University of Texas (left), congratulates his successor Dean Linton E. Grinter, University of Florida, on his election as president of the American Society for Engineering Education. Election took place during the society's convention held June 22-26 at University of Florida, Gainsville.

In the keynote speech Woolrich declared, "The world is undergoing a second scientific revolution, and we as educators are going to have to do a better job in training creative engineers if scientific progress is to be assured." In his address to the convention, Grinter said that industry-minded America will always be caught short on its supply of engineers. When demand for engineers outruns the supply, he added, the nation must make greater use of the limited numbers by providing advanced training and by furnishing each professional person with all available technical aids.

Can France Stay Ahead of the Game in Power?

PARIS (McGraw-Hill World News)—A French investment of more than $3 billion over the last six years in construction of new electric power facilities is paying off in badly needed electric power production nearly double the 1946 level.

Installed power at hydro power plants has risen from 3,743,000 kw in 1946 to 6,600,000 kw this year; maximum power from thermal plants went from 2,600,000 kw to 5,640,000 kw in the same period.

French consumption of electric power has kept pace with this rapid development of production capacity. Consumption amounted to 24,386 million kwhr in 1946, and today it is running at an annual rate of 40,800 million kwhr.

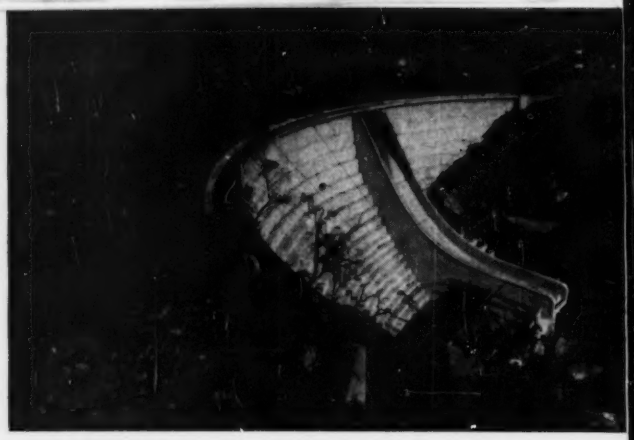
Despite the heavy investment program of the last few years and the impressive results already achieved or in prospect, France will live for years under the shadow of an electric power shortage. Production capacity and consumption will remain so delicately balanced that mere bad luck—in the form of a drought, for example—could force reimposition of the electric power rationing that was discarded late in 1950 as new production facilities enabled the industry to catch up with demand.

Atomic Drive . . . Promising for France as a future source of power to ease the shortage is atomic energy, and she has aimed her atomic development program squarely at the goal of developing atomic power for industry. Last year, France launched a five-year, $108-million atomic development program which is planned to be the first phase of a 15-year effort that will supply France with at least the beginnings of a network of nuclear power plants by 1967.

The French atomic energy program is just beginning to move. The first French reactor—a 5-kw pile named "Zoe" at Chatillon near Paris—went into operation Dec. 15, 1948. A second reactor at Saclay 20 miles from Paris was put into operation last October. Two more primary reactors will be built under the first five-year program. The second five-year plan will emphasize the construction of secondary reactors working from plutonium and the erection of pilot plants for the production of nuclear power. The third five-year plan, it is hoped, will see the actual construction of nuclear power plants capable of commercially sound operation.

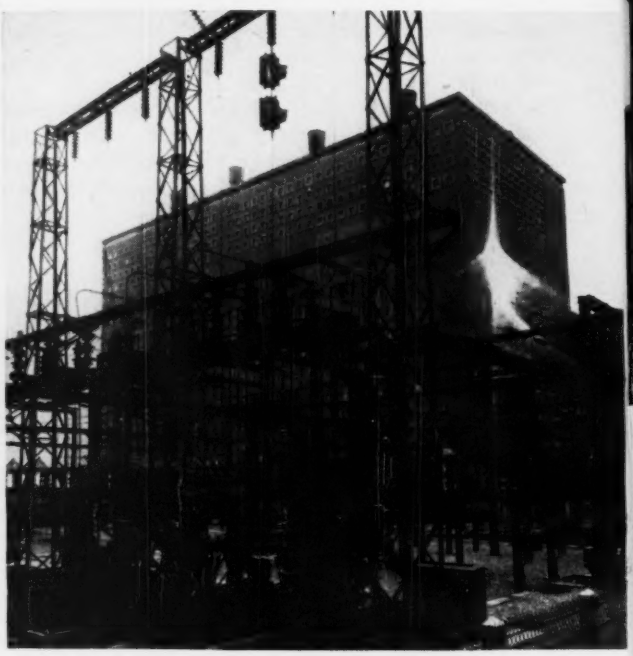
This atomic development program may prove to be of vital importance. Unless atomic power shows up to fill the gap, the country's power problems may become acute.

France lagged far behind other western nations in the development of electric power production capacity during the decade before World War II. And the war years, under German occupation, offered no opportunity for expanding production. As a result, French production increased only about 60% between 1929 and 1946 while Britain produced nearly four times as much electric power in 1946 as in 1929.



YAINVILLE STATION near Rouen added 50,000 kw capacity last year

New hydro capacity helps . . .



BORT PLANT on Dordogne River brought in first 95,000 kw in '52

So does added steam . . .

Figures compiled by experts of the Monnet Plan for the modernization of French industry show that France is still substantially behind other Western nations in utilization of electric power. French production in 1951 amounted to about 900 kwhr for each Frenchman compared with 1,073 kwhr per capita in Western Germany, 1,092 in Belgium, 1,200 in Great Britain and 2,380 in the United States.

Boost from Monnet Plan . . . The situation would have been much worse today had it not been for the program of investment in key sectors of French industry that began

nationalized company concerned with

FRENCH ATOMIC EXPERTS Maurice Surdin, Jean Perrin and Mme Irene Curie operate control panel of pile at Chatillon near Paris

. . . But France today is looking to the atom to beat the shortage

with the Monnet Plan in 1947. The Monnet Plan gave a high priority to investment in the electric power industry, especially to hydroelectric development and construction of modern thermal power plants located in the mine fields where poor quality coal could be used economically.

This investment program now is bringing a steady flow of new electric power production facilities into operation. During last year 17 new hydroelectric power installations went into service adding nearly 800,000 kw of installed capacity. These new installations included the first and second groups at Ottmarsheim with 72,000 kw, the first group at Les Brevieres with 32,000 kw, the first group at Bort with 95,000 kw, the second group at Chastang with 85,000 kw, and three groups at Andre Blondel with 135,000 kw.

A total of 11 new thermal plants also went into service last year. They raised thermal production capacity by 487,500 kw. Included were the first and second groups at Dechy with 120,000 kw, the second group at Yainville with 50,000 kw, and the first group at Emil Hucket with 100,000 kw.

Within a few months the first group at a huge new plant at Carling in the Moselle department of northern France will begin operating. The Carling plant eventually is expected to be the largest thermal plant at a minehead in Europe. It will have four generating groups with 100,000 kw each. Only half of the plant will be finished this year—two groups.

The nationalized company, Electricite de France, is by far the largest producer and distributor of electric power in France. The biggest outside producer of hydroelectric power is the Compagnie Nationale du Rhone, a partly

nationalized company concerned with development of the Rhone River. Charbonnages de France, the nationalized coal mining firm, and some privately owned steel companies produced substantial amounts of electric power from thermal plants. A number of small concerns distribute electric power in limited areas, most of them buying the power from EDF.

225-Kv Grid Almost Doubled . . . To distribute the rapidly increasing supply of electric power available, EDF almost doubled its 225-kv grid between 1946 and 1952 to a current total of 4,035 miles of 225-kv lines. The 150-kv lines were built up more slowly to a current total of 5,256 miles, and 120-kv and 110-kv lines were progressively eliminated until only about 180 miles are still in existence today.

International exchange of electric power has never been very important in France. France imports from and exports to all her neighbors—Germany, Belgium, Switzerland, Italy and Spain—but the exchanges are not large. Last year France imported a total of 600 million kwhr and exported a total of 550 million kwhr.

Cross-Channel Cable . . . A project still in the preliminary talking stage may some day change that picture. Experts figure a cable under the channel that would allow Britain and France to exchange electric power would be of substantial benefit to both countries.

But the many technical problems involved are difficult and the cost would be high. At present the project has not advanced beyond discussion and experimentation to determine what type cable might be used.

Some preliminary work also has been carried out to determine the feasibility of producing electric power by wind generation. Teams of technicians have covered most of France to gather data on wind velocity, and engineers have experimented with several types of generating equipment. But practical results still are a long way in the future.

So far, France has managed to stay a point or two ahead of power demand. But the margin as it is in most Western European countries is slim. It will take, beside hard work and ingenuity, perhaps a miracle of the atomic kind to end France's power worries in the the years to come.

Lewis L. Strauss . . .

Named AEC Head

President Eisenhower's choice of Lewis L. Strauss to head the Atomic Energy Commission boosts prospects for industrial production of atomic power.

Strauss, who has been acting as the president's special advisor on atomic policy since early this year, took an active role in the development of electric power from atomic reactors. He also strongly backed AEC's bid for funds for research and development work on power reactors.

Strauss' appointment as a member of the commission was approved by the Senate on June 27. He has been popular with members of Congress since he served as one of the original AEC commissioners from 1946 to 1950. His new term runs until 1958.

Still unfilled is the vacancy caused by the resignation last year of former commissioner T. Keith Glennan.

Index Is Available

Electrical World's semi-annual index for January-June 1953 has been prepared and copies are now available upon request. They may be obtained without charge. Address requests to Electrical World, Editorial Office, 330 W. 42nd St., New York 36, N. Y.

Oregon Tie-Line . . .

. . . to serve ferro-nickel plant will be completed jointly by BPA, California-Oregon Power

Bonneville Power Administration and California-Oregon Power Co have worked out an agreement with the blessing of Interior Secretary Douglas McKay for joint completion of a 230-kv transmission line. The line will deliver Columbia River federal hydro energy to the M. A. Hanna Co ferro-nickel mining and smelting facility under construction at Nickel Mountain and other parts of southwest Oregon coastal areas.

The line was begun under Congressional authorization but never was completed because of refusal of Congress to approve necessary funds. Technically, the BPA-Copco agreement also creates a tie-in between the Columbia River power pool and the northern California pool supplied by Shasta Dam.

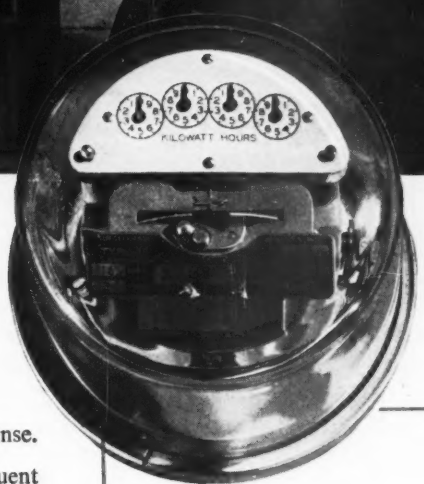
Terms of Agreement . . . Terms of the agreement announced by McKay last week call for BPA to complete 10.9 miles of the Redmond-Klamath Falls 230-kv circuit from its present Chemult terminus to Yamsay Station. Copco will acquire present cleared right-of-way south of Yamsay to Klamath Falls and will build a substation at Klamath Falls. BPA materials already purchased for the Yamsay-Klamath Falls link will be sold to Copco on a replacement basis. Copco will also build a new transmission line from its Dixonville substation to a Nickel Mountain substation to be erected by BPA to supply Hanna's defense materials project in Douglas County's mining region. BPA has allocated firm energy to Hanna from a block of new generation reserved for defense projects.

Schedules call for the Redmond-Klamath Falls line and the Klamath Falls substation to be ready December, 1953, and the Copco and BPA phases for Nickel Mountain by the summer of 1954.

McKay praised the agreement between BPA and Copco as "an outstanding example of a working partnership between the government and public and private utilities in meeting their responsibilities for the growing domestic and industrial power needs of the Pacific Northwest."

a full measure of operating economy

Sangamo J Meters



Many Utilities have installed modern meter test and shop facilities because Meter Department Executives are well aware of the many economies made possible by such labor saving equipment.

But . . . the *full* measure of operating economy is obtained only when such facilities are coupled with a meter *designed* for minimum maintenance expense.

The Sangamo Type J Meter: Stays accurate—frequent recalibration is unnecessary . . . Doesn't deteriorate in corrosive atmospheres . . . Remains undamaged under extreme surge or overload conditions—high current carrying capacity reduces burnouts on heavy overloads.

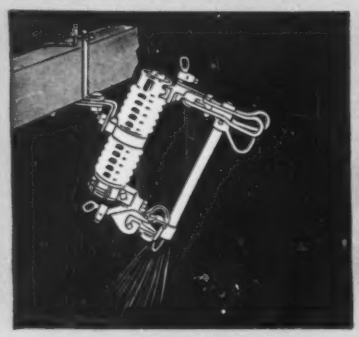
Keep *your* operating expenses at a minimum with the proven Sangamo J Meter.

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

Only Measured Facts are Known Facts

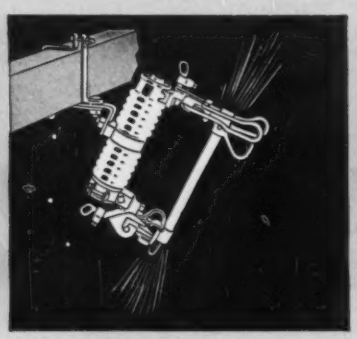
JM53-5

Here's L-M's Valve Type Arrester



On Low Amperage Faults

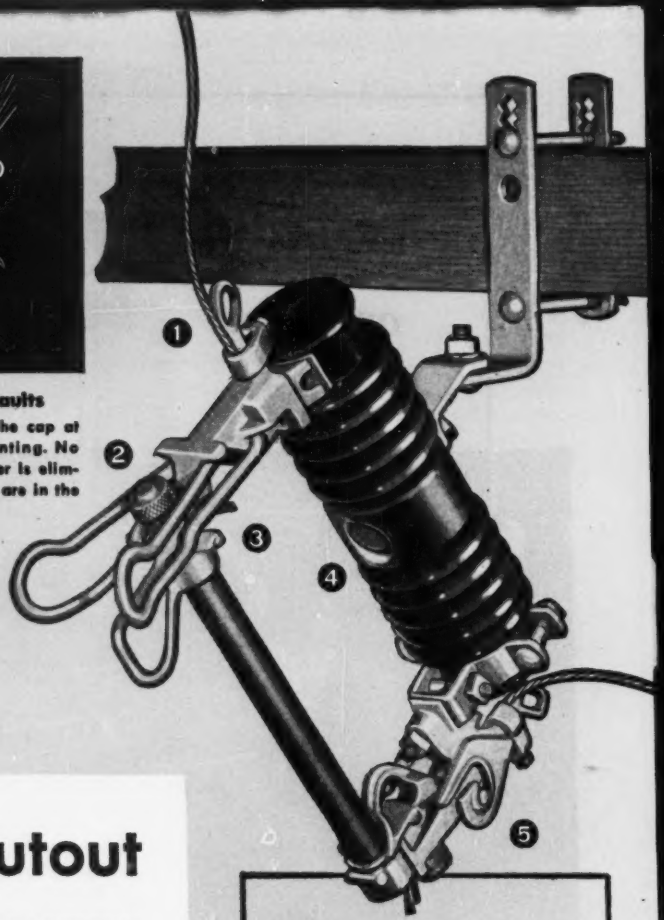
single venting, at bottom only, provides ample pressure to expel the arc and the fuse link, before the tube drops down. In this case, only the fuse link needs to be replaced, not the cap.



On High Amperage Faults

pressure automatically opens the cap at the top to provide double venting. No bursting of tubes. Gas flashover is eliminated because no cutout parts are in the path of gas discharge.

This expendable cap acts as an automatic escape valve. On low faults it remains undisturbed. On heavy faults the top opens, as shown at right, relieving the pressure.



L-M's "HCO" Fuse Cutout Provides 8000 Amperes Interrupting Capacity

For the first time, high interrupting capacity is available at low cost, in L-M's new open type distribution cutout. The increased interrupting capacity of the "HCO" is available at only about $3 more than the price of standard duty open type cutouts. This makes the "HCO" the lowest priced cutout of its type.

The "HCO" is ingeniously designed to handle both low amperage and high amperage faults equally well, with standard distribution fuse links.

This is accomplished by the automatic pressure-controlled expendable cap at the top of the tube. On low amperage faults, the cap remains intact, confining the pressure and providing bottom venting only. On high amperage faults, the diaphragm in the cap opens, relieving the pressure by providing double venting.

The "HCO" is completely bird-proof. The tube can be removed and replaced with the standard head hook-stick. It takes standard distribution fuse links.

Get details from the L-M Field Engineer; or write for Bulletin. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

Rated at 5, 7.5, and 15 KV, 100 amperes.

NOTICE THESE FEATURES

1. Rated at 5, 7.5, and 15 kv, 100 amperes, with 8000 amperes interrupting capacity using any size standard universal fuse links.
2. Expendable cap acts as automatic pressure-controlled vent to provide double venting on high amperage faults.
3. All current-carrying parts are silver plated.
4. Completely bird-proof design.
5. Heavy, closely fitted L-M—patented double hinge takes all the recoil forces. Top contacts not stressed by recoil. In reclosing, the hinge guides the tube directly between the contacts—it can't miss the top contacts.

The expendable caps, replaced only when the link blows on a high amperage fault, are economical, easily replaced. They are supplied in a cloth bag, carried with the fuse links.

LINE MATERIAL

fuse cutouts and fuse links

Here's L-M's Valve Type Arrester In With The Fish For 30 Days... But Tests Show It Stays Dry Inside

L-M 3 kv Valve Type Arrester in the goldfish bowl where it has been under water for 30 days. Test data and oscillograms show that even complete submersion for this period in no way reduced the arrester's ability to render safe, long-time protection. Even the slightest trace of moisture would have been evident from the test results. There wasn't any!

By **R. D. CLEAVES**
Manager, Protective and Switching Equipment Sales
Line Material Company

Started originally as something of a "gag," our goldfish bowl test demonstrates clearly the complete moisture-sealing of L-M valve type lightning arresters.

In a spirit of good clean fun, we tested a stock L-M arrester and put it into a big goldfish bowl as a sales conference stunt—just to show L-M Field Engineers that goldfish couldn't get inside of it. But we left the arrester, completely submerged in the tank of water, for 30 days. Then we repeated the same tests made originally on the arrester.

At the end of the 30-day period, the lightning arrester was in good operating condition. It had the same characteristics as it had originally, as shown by our laboratory's test data and oscillograms at the right. There was absolutely no moisture leakage.

You'll probably never try to operate an L-M valve type arrester under water. But you can be sure that prolonged rain or humid air will never affect its operating characteristics. For L-M arresters are completely and permanently sealed against moisture, and retain their operating characteristics without change for many, many years.

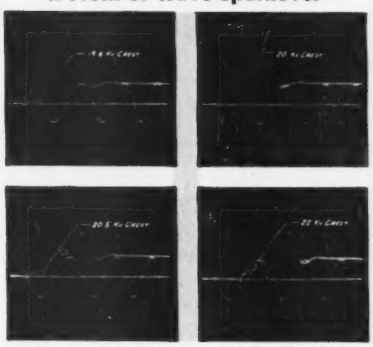
Get the Whole Story on L-M Valve Type Arresters

L-M arresters have many features that contribute to their ability to protect other apparatus without fault. The precision gap is heavily built, with electrodes machined out of solid brass bars. The valve element is molded directly into the housing, filling it completely and solidly. Lens-shaped electrodes distribute surges evenly through the element, resulting in maximum surge capacity. The Isolator, an L-M-patented insurance feature, guarantees that no matter what happens, the arrester will never ground feeders.

Get the whole story. Ask the L-M Field Engineer for Bulletin LA-2. Or write direct to Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division).

BEFORE **AFTER**

1. Front of Wave Sparkover



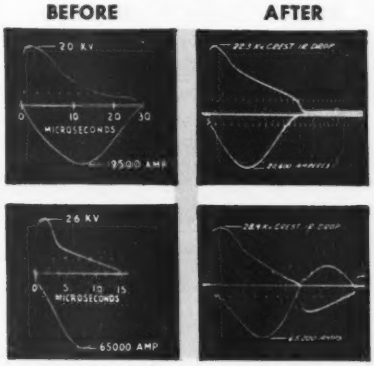
Oscillograms of two impulse sparkover tests before (left) and after (right) show no change in the protection offered by the arrester after 30 days in the goldfish bowl.

2. 60 Cycle Sparkover and Radio Noise

Both before and after the 30-day test, the arrester was noise-free through the sparkover voltage of 7 kv rms.

3. IR Drop

BEFORE **AFTER**



On both 20,000 and 65,000 ampere surges, the arrester showed no change in IR Drop from the surge tests made before the demonstration.

4. Discharge Current Withstand

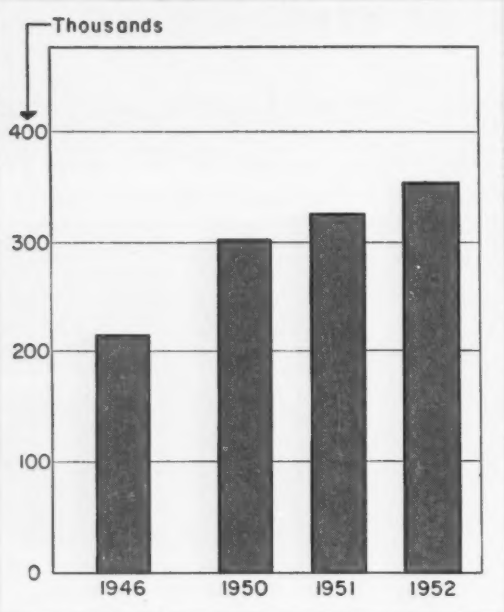
After the demonstration, the arrester was given five shots of 65,000 amperes each. These caused no damage.

LM®

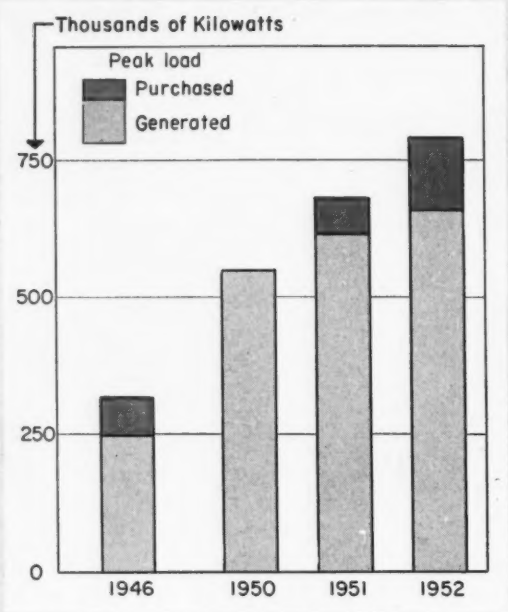
123

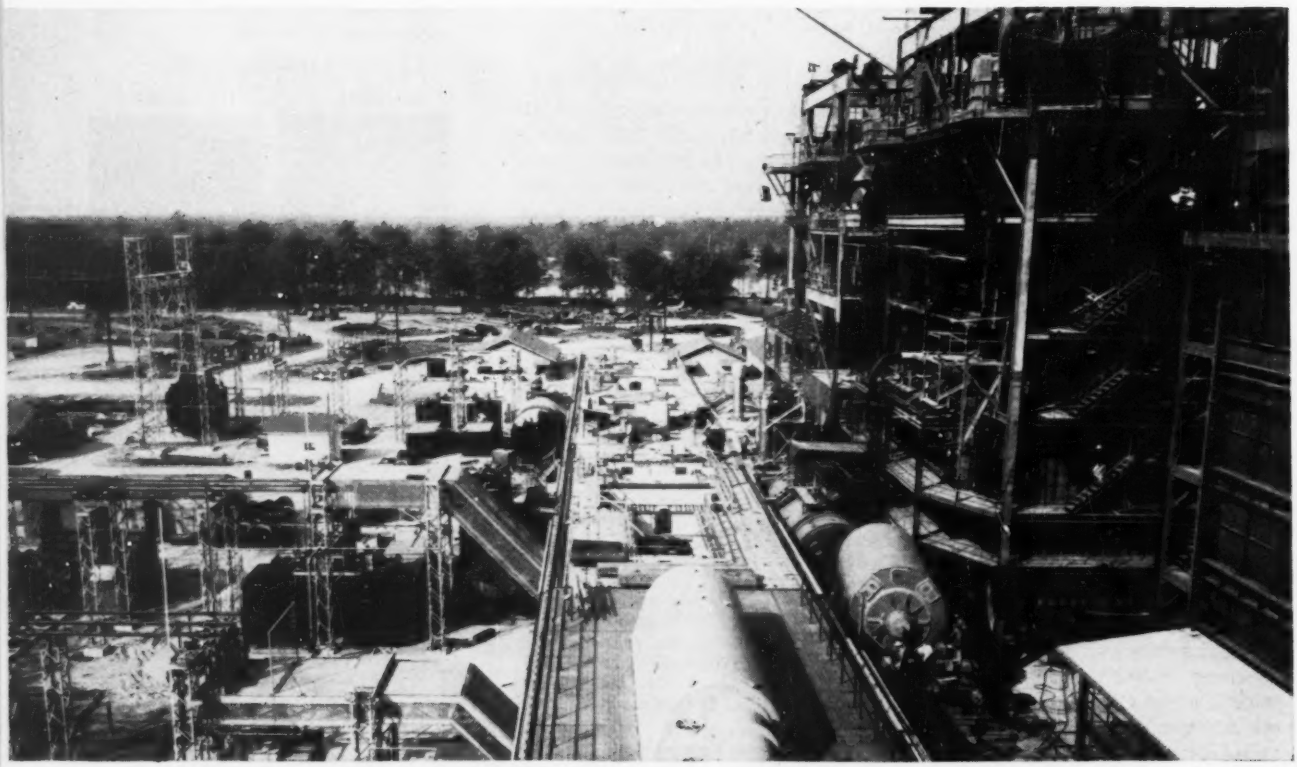
LINE MATERIAL
Lightning Arresters

In total customers...



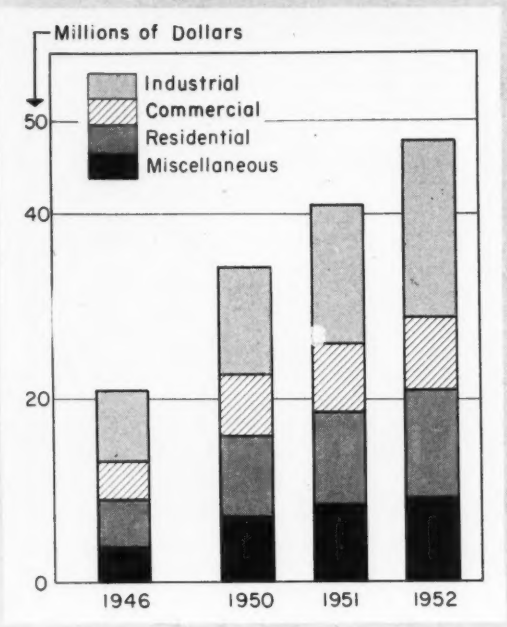
In peak load...





OUTDOOR PLANT DESIGN has been used to the full by Houston Lighting. This has facilitated the utility's construction program and cut costs considerably. The company has needed all the new generation it could get to keep pace with the unprecedented rise in peak load

In operating revenue...



the rise has been phenomenal at

Houston Lighting— Where Tomorrow Arrived Today

Those of you who think your company's loads and systems have been growing rapidly at a spectacular rate since World War II, sit up and take a look at some Houston Lighting & Power Co statistics:

- System demand jumped from 310,100 kw in 1946 to 793,400 kw in 1952, an increase of 156%.
- Load increase in 1951 over 1950 alone was 28%.
- Capacity, installed in the past six years and planned for the next three years, will bring the total to 1,171,000 kw, nearly five times the 1946 capacity of 252,500 kw.

A rapid influx of many industries, particularly chemical, since the war has been responsible for most of these skyrocketing demands for power. Population increases have matched industrial growth because workers have been attracted to the industries.

Strained Ingenuity . . . Some unusual measures have been used in meeting the challenge. Demands on the system were met without any curtailment of service.

Neighboring systems were called upon for 124,900 kw of capacity in 1952. Special measures were necessary to make it possible for these other systems to make available this much capacity to meet the Houston area load.

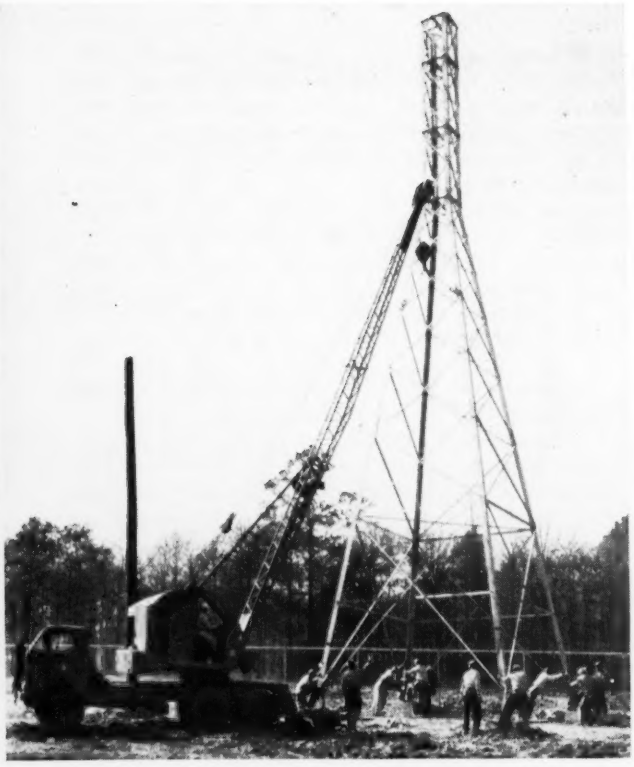
For example, the City of Austin system had 15,000 kw of spare generating capacity but lacked the transformer to handle it. Houston L&P provided the necessary transformers and Austin put the added capacity into the Lower Colorado River Authority System, through which it was made available to Houston L&P.

Lower Colorado River Authority provides, under contract, 60,000 kw of peaking power to Houston. In order to increase this by 40,000 kw to meet the summer peak in 1952, Houston advanced LCRA funds for building supplementary transmission lines and facilities, including capacitors to maintain voltage. This cost is now being repaid to the company by LCRA.

On three Houston generating units, blading was modified to make it possible to get more capacity.

Manufacturers were consulted and steam pressures were raised to the maximum safe limits for other generating units on the company's system in order to get all the capacity available from them. Hydrogen pressures were increased to 30 pounds.

All of these measures contributed materially to meeting



CRANE ERECTS TOWERS after they have been assembled on the ground. Houston Lighting found this another cost-and-time saving idea

the challenge of zooming loads.

Expansion Schedule . . . Generating facilities expanded 144% in six years from 1946 to 1952. Capacity was 252,500 kw in 1946, had jumped to 540,000 kw by 1950 and went on up to 615,000 kw in 1951, where it now stands.

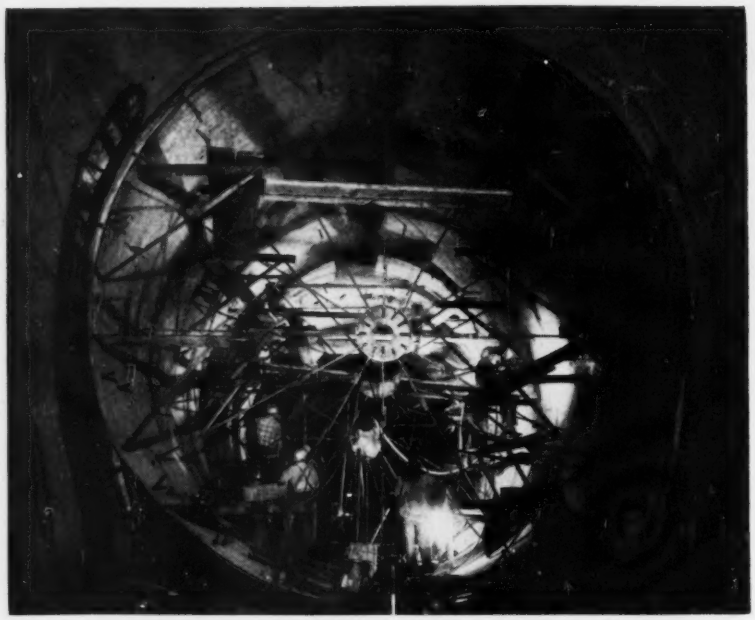
Plans call for a further increase of 90% in capacity in the three years beginning with 1953. Two units of 100,000 kw each will be added at the Greens Bayou Station in 1953. The first two units of 100,000-kw each will go into service at the new Webster station in 1954 and in 1955 a 156,000-kw unit will go into service at the Deepwater Station, bringing total system generating capacity to the 1,171,000 kw figure by 1955. If no more unexpected loads materialize, and if there are no emergency shutdowns at critical times, the company expects to supply this summer's peak from its own facilities.

The number of customers and kilowatt hour sales and revenue have increased rapidly. In 1946 the company's customers numbered 217,777. By 1952 this had jumped to 349,191, an increase of 60.3%. Kilowatt hour sales were up from 1,622,125,000 in 1946 to 4,234,448,000 in 1952, an increase of 161%. Total operating revenue increased from $20,858,839 in 1946 to $47,680,005 in 1952, an increase of 128.6%. In 1951 gross revenues increased 19.1% over 1950 and net revenues were up 5.4%. In 1952 the gross was up 16.2% and net revenues increased by 26.9%.

Operating Payroll Down . . . All this growth has been handled with very little increase in personnel.

This has been accomplished through streamlining and decentralizing operations, reduction in paper work, and the use of modern mechanized methods. Service centers have been set up in outlying areas where the great volume of more-or-less routine engineering, construction, operating and customer functions for the area are handled. Customers are brought in closer contact with the people serving them. Engineering and construction forces work more closely with each other. Customer service has been improved.

Result for Houston Lighting: Maximum savings in manpower and money on a system that is growing by leaps and bounds.



PACIFIC P&L CREWS are working at an around-the-clock pace installing steel linings in penstock tunnels of company's Yale project to get first 54,000-kw unit back on line by August

PP&L Rushes Penstock Repair

Utility hopes to finish installing linings in tunnels of Yale project so unit can go back on line in August

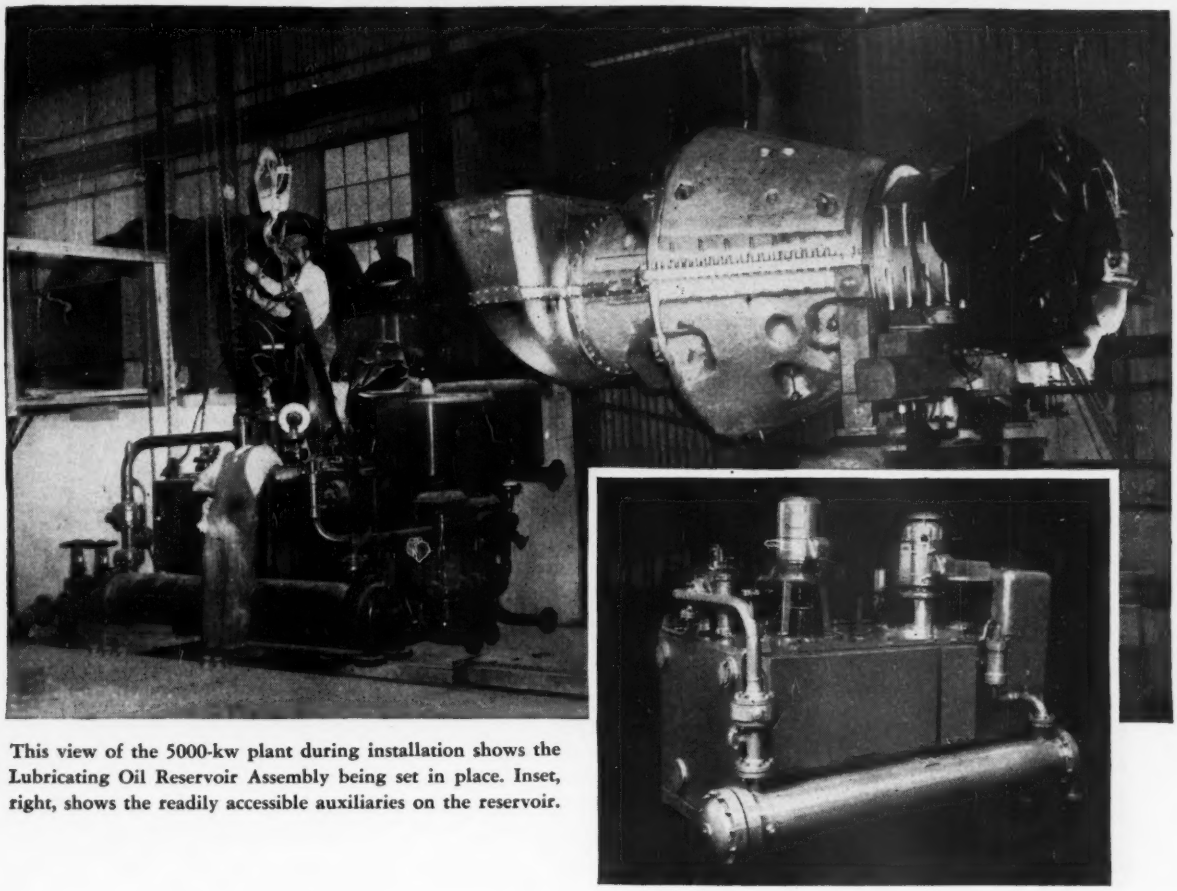
Crews installing steel linings in penstock tunnels of Pacific Power & Light Co's Yale project on Washington's Lewis River are pushing at an around-the-clock pace to complete work for a new target date for putting the first 54,000-kw generator on the line. Pres Paul B. McKee reports the schedule calls for the initial unit back on the line by August, the second in September for the beginning of the Pacific Northwest's storage drawdown season.

Current repairs in the tunnel got underway in mid-January after discovery of cracks caused by movement of the earth while the plant was shut down for inspection following initial test runs of first generator, beginning Nov. 1, and second Dec. 1, 1952.

Difficult Problems . . . Repair of the penstock tunnels posed problems for PP&L and American Pipe & Construction Co, which contracted the lining job. To reach the damaged sections, it was necessary to drive an adit (a nearly horizontal passage from the surface) from downstream side of the project, through the cliff to come in under the parallel penstock tunnels and then cut up. Through this adit, American Pipe is hauling steel arcs of approximately 8 ft in sections and reforming them in place inside the 18 ft, 6 in. dia. tunnel before welding into rings. Some 400 ft of each of the 1,100-ft long tunnels are being relined as a result of hairline cracks attributed to unpredictable movement of the basalt cliff they pierce. The lining is similar to original steel casing placed along the final 250 ft of the penstock tunnels at the powerhouse ends.

PP&L's $30-million Yale project, at the head of the lake behind the company's Merwin Dam, has been pronounced "a perfect structure in every respect, which should continue to function without maintenance or repair for an indefinite period" by consulting engineers and geologists who inspected it recently.

Announcement of the target dates was made to touring members of the Edison Electric Institute's hydraulic power committee which met in Portland June 15-18 and visited the host company's projects June 17.



This view of the 5000-kw plant during installation shows the Lubricating Oil Reservoir Assembly being set in place. Inset, right, shows the readily accessible auxiliaries on the reservoir.

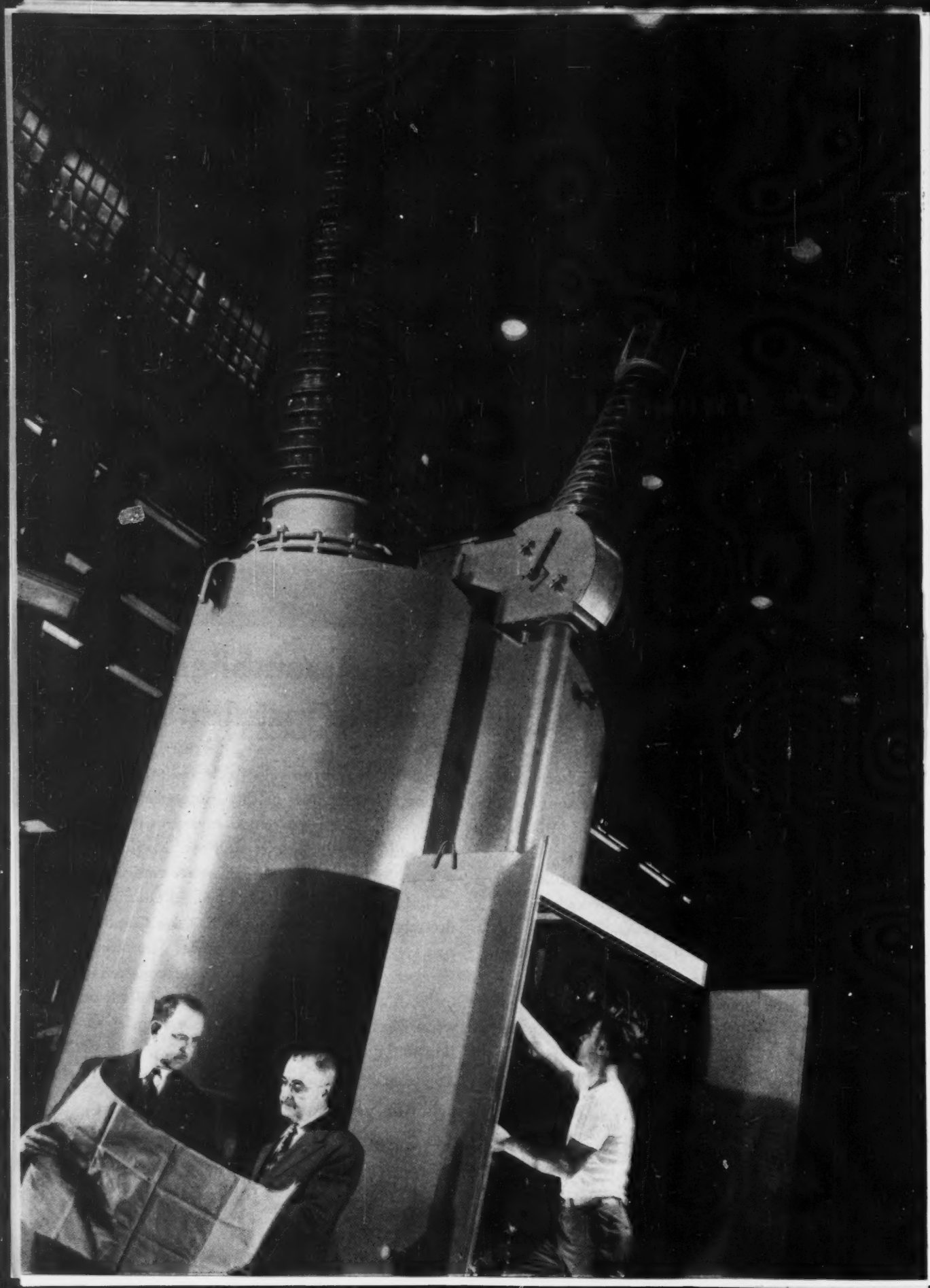
Westinghouse "Package Assemblies" speed 5000-kw gas turbine installation

Lower installed cost through speed and economy of handling "package assemblies" are among the many advantages of Westinghouse 5000-kw Combustion Gas Turbines. Consisting of only nine self-contained and compact assemblies, the complete plant is carefully engineered to simplify shipping and installation.

The Lubricating Oil Reservoir, above, shows how most of the auxiliaries are mounted in a typically compact, single assembly. The other eight "packages" are: gas turbine assembly, reduction gear, generator, control panel, air coolers, starting motor, motor control cubicle and piping and wiring. Development of this integrated "package" design means fewer man-hours for installation and less handling equipment. Also, lines, piping, duct work and fabrication are minimized.

These savings in installed cost prompt thorough investigation of Westinghouse 5000-kw Combustion Gas Turbines for electric power generation. Consult your local Westinghouse Representative for help in utilizing this modern power plant or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-50557

YOU CAN BE SURE...IF IT'S Westinghouse



Meeting the Nation's Growing Power Load

Westinghouse "Big Ben" world's highest interrupting capacity!

25,000,000 KVA at 330 KV

A most important question facing America's Utilities today is—"How do we transmit larger blocks of power at a cost low enough to make it practical and profitable?" The right answers to that question are receiving daily attention at Westinghouse.

One of the most recent answers is 330-kv transmission. "Big Ben"—the largest circuit breaker ever built, has been designed by Westinghouse to protect such a system. It is a 3-cycle interrupting, 20-cycle reclosing breaker capable of interrupting 25,000,000 kva and rated at 1600 amperes continuous current. This tremendous increase in breaker rating permits greater concentration of generating capacity . . . more extensive system interconnection . . . eliminates duplication of transmission facilities. Thus total system investment is minimized, and operating and maintenance costs reduced.

This design is an extension of the low-oil-content, dead-tank "Watchcase®" design—developed and perfected after 28 years of High Power Laboratory testing, and proved by field service.

Such products of research and design development give assurance to Electric Utilities that the race to economically satisfy America's growing power appetite will be won. The Westinghouse quest for more efficient, lower cost apparatus will continue to equip Utilities today—for tomorrow!

®Trade-Mark J-97174-A

YOU CAN BE SURE...IF IT'S

Westinghouse

"Big Ben"... Low-Oil Content... Dead Tank

9600 gallons instead of 20,000! The low-oil-content, "Watchcase" tank of the Westinghouse "Big Ben" requires only 9600 gallons of oil as compared with the 20,000 gallons needed for a conventional round tank. Thus this breaker saves weight, space, oil-handling costs and time, but retains the reliability, safety and economy of the time-proved, dead-tank design.

Condenser-Type Bushings

This high-voltage breaker design was made possible by the fundamentally sound electrical principle of Westinghouse Condenser Bushings. Equal capacitance steps, from high-tension stud to grounded flange are obtained by layers of oil-impregnated kraft paper interspersed with layers of metal foil, carefully machine wrapped under close control. The resultant uniform voltage gradient in the Condenser and over the porcelain weather casing prevents areas of high-voltage stress, and thus eliminates radio interference. Add over-all, high cantilever strength of the bushing design . . . moisture-proof construction . . . low power factor . . . and you have high bushing efficiency and long life.

One Pneumatic Operating Mechanism

A single pneumatic mechanism simultaneously operates all 3 poles of "Big Ben". It is *mechanically* and electrically trip free. Contacts open without restraint since opening speed is independent of air pressure or exhaust time. The pneumatic mechanism (AA-14), with its 14" piston used to close "Big Ben", has the same manufacturing precision and simple accessible mechanical lever system that has been so successful on the AA-7 and the AA-10 mechanisms. These have been used on the complete range of Westinghouse Oil Circuit Breakers from 15 kv, 500,000 kva through 330 kv, 25,000,000 kva. High-speed (20 cycles or better) reclosing characteristics are provided as required.

De-ion® Arc Control

Only two interrupters per pole are used to obtain "Big Ben's" 25,000,000-kva interrupting rating within three cycles. This minimum number of contacts—requiring less maintenance—is possible because of the multi-flow, jet orifice-type interrupter. This De-ion grid uses self-generated oil flow to interrupt medium and high currents and mechanically pumped oil to interrupt load and charging currents . . . all in three cycles. During interruption, oil and gas flow in the grid are balanced, so that high stresses do not reach bushings nor shift alignment. Interruption following a high-speed reclosing is effective because of the high-speed scavenging action of the pump, replenishing the oil supply of the interrupting chamber with fresh oil after each operation.

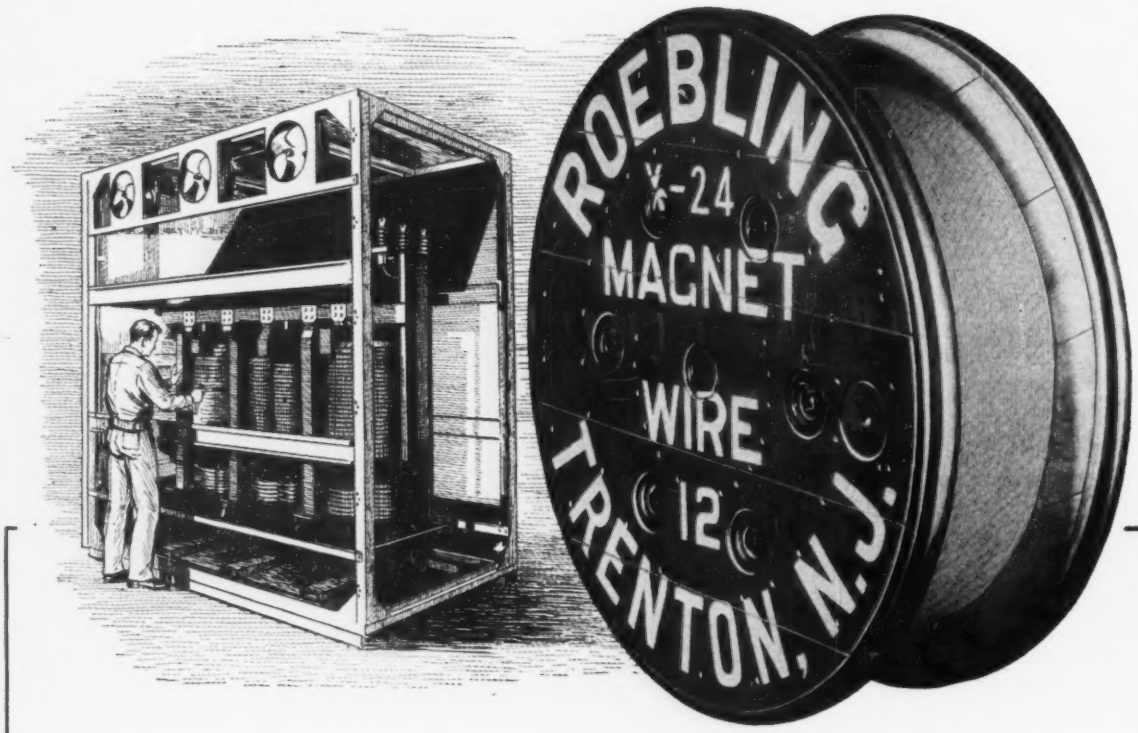
• • •

Additional advantage of the dead-tank design is that it makes possible the low-cost bushing potential device and bushing-type current transformers. Six potential devices —one per bushing—and a total of 18 current transformers can be provided in each breaker. Accurate billing metering, relaying or linear coupler applications are possible.

For further details on "Big Ben" and similar oil-type circuit breakers for high-voltage transmission, call your Westinghouse Representative—or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Now...a new high temperature magnet wire...

ROEBLING ROETEMP



ROETEMP MAGNET WIRE brings you a brand new and superior type of insulation for applications that involve high operating temperatures. Its heat-resistant properties and dielectric strength, its extra toughness and working ease make this new Roebling ROETEMP your top choice for Class B, dry-type transformer windings, and for other electro-magnetic devices designed for operation with hot spot temperatures of 130°C (266°F).

Roebling ROETEMP Magnet Wire is insulated with a specially processed tape applied in a single wrap with a liberal overlap. It is exceptionally pliable and bends without cracking or separating from the conductor. It won't unravel; is ideal for higher speed winding; comes in a range of sizes from #1 to #12 AWG, round, square and rectangular.

Write for full data on Roebling ROETEMP Magnet Wire...and Roebling silicone bonded ROEGLAS wires for special temperature problems. John A. Roebling's Sons Corp., Trenton 2, N. J.

A subsidiary of The Colorado Fuel and Iron Corporation

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST & 120 S. HEWITT ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • PITTSBURGH, 1301 CLARK BLDG • ROCHESTER, 1 FLINT ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY

NEWS ABOUT PEOPLE

Peterson Appointed a VP

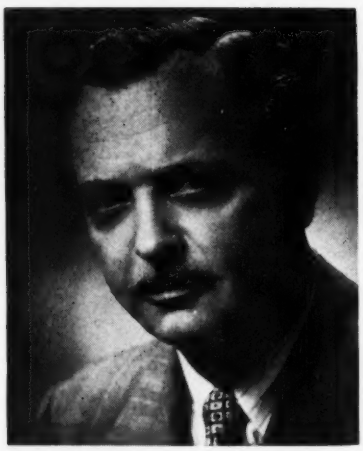
L. L. PETERSON

L. L. Peterson, executive assistant in Interstate Power Co's general offices at Dubuque, Iowa, has been named a vice president of the utility.

Announcement of Peterson's advancement to the vice presidency was made by B. F. Pickard, president of the utility.

Peterson, an engineering graduate of the University of Minnesota, worked with Northern States Power Co before joining Interstate Power in 1928 as assistant to the manager of the Northern Minnesota Division of the company. In 1937 he went to Clinton, Iowa, as district manager, transferring to Dubuque in 1951 as executive assistant.

B. C. Electric Elevates Purdy



DR HARRY L. PURDY

Dr Harry L. Purdy has been appointed a vice president of British Columbia Electric Co, Ltd. In addition to the utility's Gas Division reporting directly to him, Dr Purdy will continue his present duties dealing with cost controls, rates, and research.

Since joining British Columbia Electric six years ago, Dr Purdy has served as director of research and administrative controls. Previously, he was a professor of economics, specializing in the public utility field, at Dartmouth College, Hanover, N. H. He holds an honorary MA degree from that institution.

During World War II he served with the U. S. Transport Board.

•

I. G. Fox, manager of purchasing, stores, and shipping for the Transformer Division of Westinghouse Electric Corp at Sharon, Pa., has been appointed manager of materials for the division.

Arthur L. Carvill has been appointed manager of electric utility field sales for the meter and instrument department of General Electric Co at Lynn, Mass. GE has also made the following appointments: **Bruce B. Gravitt,** manager of meter and time switch sales; **James A. Yunker,** manager of instrument transformer sales; and **Ralph W. Drayer,** manager of time switch sales.

Olin H. Ririe, manager of Utah Power & Light Co's Ogden Division, has been promoted to industrial relations manager with offices at Salt Lake City. The utility also advanced **Orson M. Slack** from manager of the company's Southern Division to manager of the Ogden Division with headquarters at Ogden. **J. Newel Stephens,** manager of the Preston (Idaho) Division, was elevated to manager of the Southern Division. **A. N. Vendell,** manager of the business development department at Preston succeeds Stephens as Preston Division manager. **Will N. Bowman,** a former newspaperman, is the company's new publicity and advertising director.

Dean B. Valentine, senior industrial engineer of Colorado Fuel & Iron Corp since 1947, has been named assistant superintendent of industrial engineering for the company.

JAMES H. PATTON

Patton Is Elected a VP by Sangamo Electric Co

Sangamo Electric Co has elected James H. Patton vice president and sales manager.

Patton has served as sales manager for the firm's Utilities and Industrial Division since 1945. Prior to this he was manager of Sangamo's Southeastern district with headquarters at Birmingham, Ala.

The new vice president started working with Sangamo on a part-time basis in 1918 while a student at the University of Michigan. Three years later he joined the firm as a full-time employee.

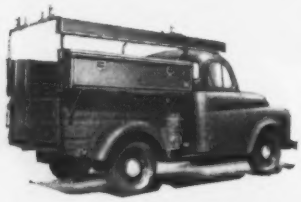
•

E. D. Chapin has been appointed manager of Grundy Electric Cooperative,

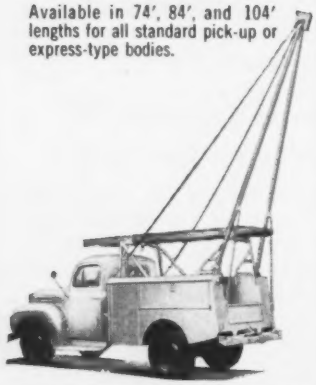
"The Accepted Standard with Utilities Everywhere"

LINE CONSTRUCTION BODY (600C)
This workhorse of the utility industry can be furnished in lengths from 9′ to 14′ for any type of utility construction work.

REVOLVING AERIAL LADDER
Models available in working heights of 23′ 6″, 26′ 6″, 30′ 6″, and 32′ 6″ for all styles of bodies.



COMPARTMENT SECTIONS
Available in 74′, 84′, and 104′ lengths for all standard pick-up or express-type bodies.



LIGHT DUTY MAINTENANCE BODY (350)
This compact unit is widely used for service and light duty construction. Fold-over derrick can handle 40′ poles.

GENERAL SERVICE BODY
Available in a wide range of body styles to fit operating requirements in all phases of the utility industry. Models can be furnished for ½, ¾, 1, and 1½ ton chassis. Compartments can be equipped with shelves, bins, and accessories to suit individual needs.

The 1 Source
for all types of utility bodies and equipment!

There's no need to look further than *Powers-American* to solve all your utility body and equipment needs. Whether the job calls for a small service body for repair work, a line body for large construction jobs, or special equipment such as towers or ladders, *Powers-American* is *your* answer.

Leadership in construction, maintenance and service work in all phases of the public utility industry guarantees long life and trouble-free service. Write today for more information.

There are many styles of *Powers-American* Bodies not shown here. Write for descriptive catalog today.

POWERS *American* DIVISION

ACF

PUBLIC UTILITY BODIES AND EQUIPMENT

McCABE-POWERS AUTO BODY COMPANY
5901 North Broadway, Saint Louis 15, Missouri

Trenton, Mo. He previously served as manager of Petit Jean Electric Co-op, Clinton, Ark., and of North Arkansas Electric Co-op, Salem, Ark., after which he was an engineer for the Arkansas Public Service Commission for five years.

Walter L. Beneditz has been assigned to the newly created position of manager of rural development for Northern States Power Co. He resigned as mayor of Carlton, Minn., where he has been a representative of the New York Life Insurance Co for the past four years, to accept the new post.

Carl H. Schofer, formerly assistant transmission engineer for Pennsylvania Power & Light Co, has been promoted to transmission engineer to replace **Frank W. Packer,** who is retiring after more than 35 years' service.

E. W. Anderson, Olympia attorney, has been appointed chairman of the Washington State Public Service Commission by Gov Arthur B. Langlie. Anderson, a member of the commission for two years, has been acting chairman since May 14 when Jerome Kuykendall resigned to accept the chairmanship of the Federal Power Commission.

E. J. Ingram, vice president in charge of sales for Jersey Central Power & Light Co, has been elected to the utility's board of directors. Ingram joined Jersey Central P&L as vice president in 1949.

Sherman W. Richardson has been named industrial relations manager of Oliver Iron & Steel Corp, Pittsburgh. He will be responsible for personnel and industrial relations activities, including public relations programs.

H. L. Klein has been named treasurer and assistant secretary of Ebasco Services, Inc. In other appointments, **E. K. Wilkins** was made general construction manager and **G. P. Redden** was appointed general construction auditor.

OBITUARY

Edwin F. Wood, electric operating superintendent of the Elmira Division of New York State Electric & Gas Corp, died recently at Elmira, N. Y. A veteran of more than 31 years' service with New York State E&G, he was named to the superintendent's post in 1943. Prior to this he served as district superintendent of the electrical department in the Hornell district.

Irwin S. Daggett, 44, chief engineer of the Schiller plant of Public Service Co of New Hampshire at Portsmouth, died there June 22. He joined the New England Public Service group in 1926.

Charles H. Caine, since 1933 vice president in charge of Midwest sales for Cornell Dubilier Electric Corp, Plainfield, N. J., died in Chicago, Ill., June 8.

R. S. Griffith, manager of electric utility sales for General Electric Co's Southeastern district, died May 27 during a visit to Keystone Heights, Fla. He had been associated with GE for more than 34 years.

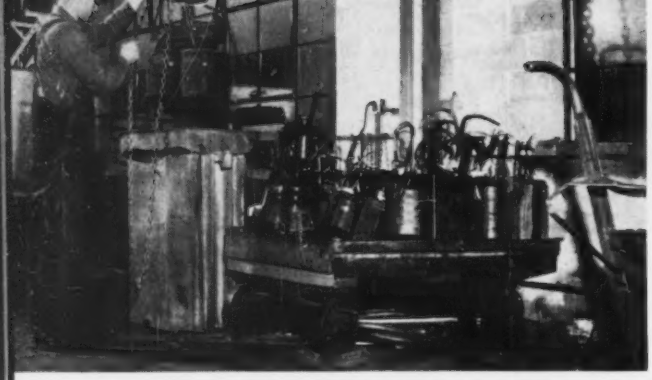
Norman Brush, Philadelphia district manager for Murray Manufacturing Corp, Brooklyn, N. Y., died June 4. He had been Philadelphia district manager since 1936.

Herman J. Goldberg, 54, former member of the Pennsylvania Public Utility Commission and an attorney for 30 years, died June 17 at Wilkes-Barre, Pa.

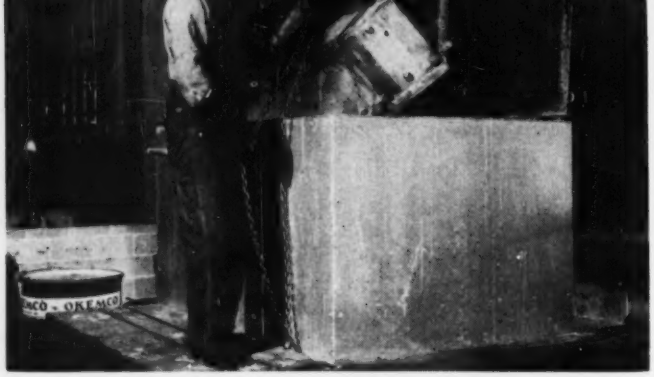
Wisconsin Group Elects New Officers

Wisconsin Municipal Utilities Association elected new officers at its 25th anniversary convention held recently at Sturgeon Bay, Wis.

Newly elected President P. E. Widsteen (seated), superintendent, Menasha Electric & Water Utilities, is congratulated by retiring President Lloyd Herlache, superintendent, Sturgeon Bay Utilities. At right is J. B. Jedwabny, Menasha office manager, who was made secretary-treasurer. Jack Nash, superintendent, Hartford Utility Department, and the association's new vice president, was not present when ballots were counted.



PARTING COMPANY after initial tests and inspection are core assembly and tank of a damaged 37.5-kva, 13-kv distribution transformer

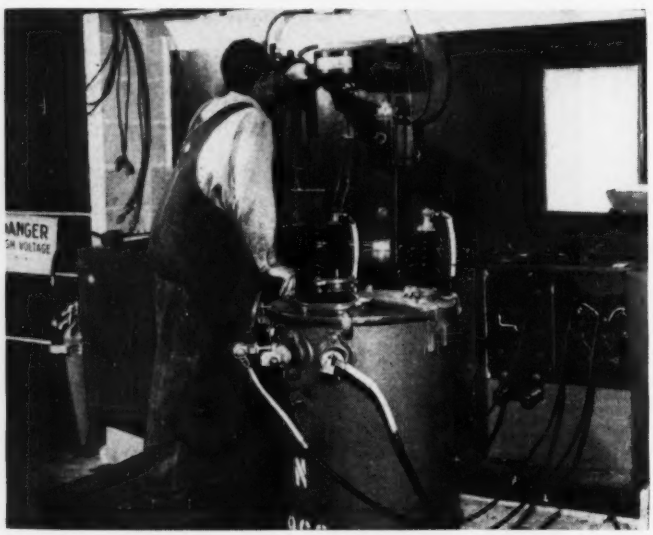


CAUSTIC BATH is given to tank, cover, and other parts for up to 24 hours. The bath solution is heated to 200F by 14 kw of strip heaters

HOT WATER AND FIBER BRUSH are used to clean tank after caustic bath. Tanks are air-dried before going on to the painting operation

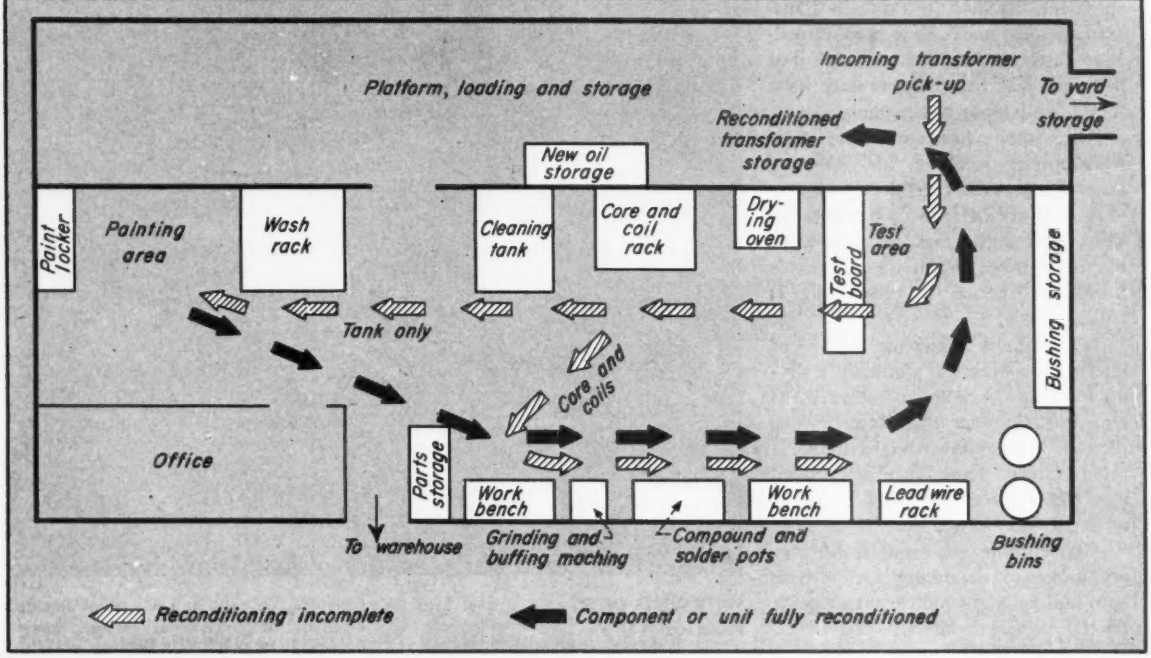
RED LEAD PRIMER is applied and is followed by coat of gray transformer paint. Hand brushing does not require a special painting room

REWIRING IN TANK follows an oil wash of core and coils and air-blast drying. Primary and secondary coils are tested dry at this point



COMPLETE TESTING is applied to all transformers entering or leaving the shop. New transformers also are tested before going into service

shipment, the shop tests all new transformers. Oil breakdown and impedance tests are omitted. In the past



ASSEMBLY LINE METHODS help Puget Sound P&L get the most from 25 by 100 ft shop designed to repair 1,000 transformers a year

Central Shop Repairs Transformers

Puget Sound P&L has facilities for handling 15,000 kva a year. Equipment worth $15,000 can handle anything from a painting job to a complete rebuild quickly and cheaply

Assembly line production is approached in a new transformer repair and maintenance shop of Puget Sound Power & Light Co. Operating on a five-day week with a crew of five and a foreman, the shop handles 15,000 kva annually or approximately 1,000 transformers. Work done ranges from cleaning and painting to complete rebuilding of distribution transformers up to 250 kva at 13 kv.

These advantages are claimed for the company operation:

1. Greater availability of repaired equipment over sending it to a manufacturer's shop.

2. Cheaper installation of core and coil assemblies.

3. More efficient operation inherent in centralized activity for all four districts, embracing 20 line headquarters, of the company.

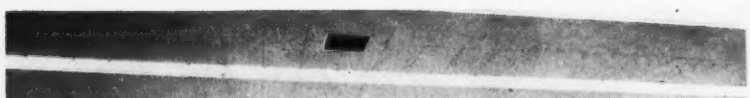
Shop equipment, worth an estimated $15,000, includes test bench for checking units "as received" and before going back into service; caustic cleaning tank; drying oven; heated pots for solder and compound; and storage racks and bins for wire, bushings, terminals, and miscellaneous transformer parts. Overhead hoist and track run the length of the shop for ease in handling complete transformers or heavy components. A fork-lift truck aids in storing and moving transformers in and around the shop.

Initial steps in an overhaul are an inspection and tests to determine what must be done. Tests include check of primary and secondary voltages at maximum rating, insulation test of both windings to ground, and a polarity test. Impedance tests are made on old transformers that do not have impedance indicated. Oil is tested for breakdown level, and reusable oil is filtered and stored.

To prevent use of new transformers that may have been damaged in

Parts Inventory Averages about $52,000 During the Year

Transformer Part	Number Stocked per Voltage Level			
	13/7.2 kv	2.4 kv	240/480 v	120/240 v
Bushings—				
Cover type	160			
Side wall type	80	100		
Pocket type	150	240		300
Stud type			50	300
Terminal Boards and Accessories	75	200	200	
Manual Ratio Adjusters and Accessories	100	75		
Core and coils	250	150		
Transformer lead wire, varnished cambric with weatherproof braid				6,000 ft



Co-op Wins Case

East Kentucky Rural Electric

shipment, the shop tests all new transformers. Oil breakdown and impedance tests are omitted. In the past five years 125 transformers have been found with loose components.

After their inspection and tests transformers received for servicing are appropriately tagged.

As transformer moves through the shop, men initial tags to show work has been done. When transformer is ready for service, a yellow tag is affixed.

Transformers showing signs of internal moisture are placed in a drying oven for 24 hours and retested. If moisture is present after three dry-out periods, a breakdown test is made at rated voltage. Experience has proved that transformers requiring 72 hours of drying are burned out.

After drying operation, transformers move to detanking area where core and coils are pulled, tagged with the tank's serial number, and stored on a rack. Tank, cover, hold-down bolts, etc, are placed in the caustic tank for a 24-hour soak. The 680-gal cleaning tank holds a 9-oz-per-gal caustic soda solution kept at 200 F. The tank is heated by 14 kw of strip heaters but during normal operations requires only 1 kw to hold its temperature constant.

After being cleaned, tank and parts are taken to the washing area and scrubbed with a fiber brush and hot water. A fiber instead of a wire brush is used because it is more flexible in reaching in-between areas on tanks. After drying in air, the tanks are painted with red lead primer and a coat of gray transformer paint. A brush is used instead of a spray gun because the painter has other tasks to perform and brush painting is more easily resumed. A spray gun would also require a sealed room ventilated by fans.

While work on tank and parts is proceeding, core and coils are cleaned and repaired. They are first soaked in transformer oil. Then ducts and open spaces are cleaned with brush and stick. After the oil bath, units are blown dry with compressed air.

Core assemblies then move to the rewiring and soldering area. When any needed work has been completed, the assemblies are reunited with their original tanks; and the transformer is fully assembled. It is tested dry at rated primary and secondary voltage. After oil has been added, unit is tested.

SIXTY ACRES OF SERVICE is what Long Island Lighting Co calls its new central operating headquarters located at Hicksville. In photo area covered by center is outlined in white

Centralized HQ Dedicated

Long Island Lighting Co's new center includes company's administrative and operating service offices and other facilities

Long Island Lighting Co's new central operating headquarters includes a new load dispatch room in a bomb-resistant area in the service building. This operating headquarters, said to be the first installation of its type in the country, was dedicated on June 24.

Occupying a 60-acre site in Hicksville, L. I., the headquarters project has cost $5.5 million to date. Its purpose is to centralize Long Island Lighting's operating and administrative service offices and its physical forces, storage facilities, laboratories, and all other functions involved in maintaining service to present and future customers.

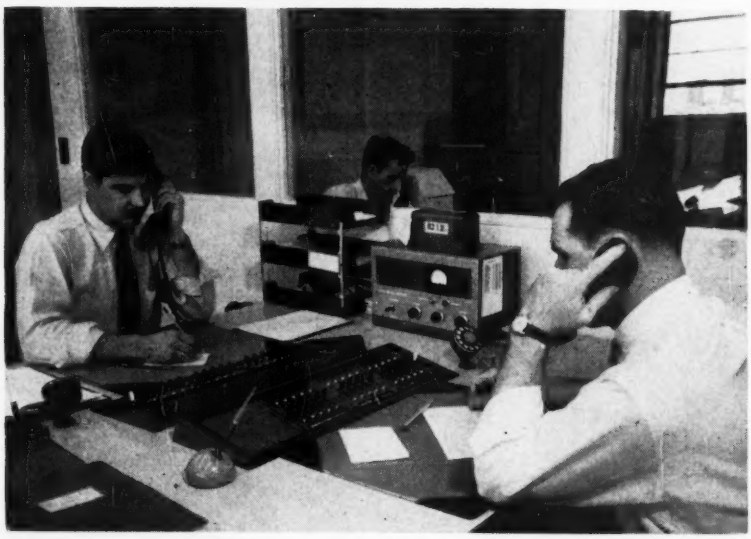
Edward F. Barrett, chairman of the board of directors, said that the idea of a centralized service originated with the company's president, Errol W. Doebler, after the 1938 hurricane when Long Island Lighting facilities were paralyzed for a time.

Symbol of Growth . . . Speaking at the dedication ceremonies, Doebler said the Hicksville headquarters was a symbol of the magnitude of Long Island's growth. In 1943 the company had 170,000 residential electric customers and this increased to more than 340,000 in 1952.

"Our statistics show that there are over 13,300 new homes under construction, an increase of 19% above the level at this time last year," Doebler continued. "Our forecasters have estimated that we will connect 30,000 new electric customers during 1953. Our industrial and commercial load continues to grow at approximately the same pace as the residential business." He said that about $50 million will be spent in 1953, most of which wil be used to supply power for all the new business."

Nerve center of the Long Island Lighting system is the service building. Here the facilities are designed to supervise customer service, equipment construction and maintenance, and the flow of electricity and gas to the consumer. On the lower level of this building is the load dispatch room which is circular in design, permitting one man to supervise the entire system. By means of control dials the system operates automatically. Wea-

LOAD DISPATCHING ROOM is circular so dispatcher can keep watch on entire system



RADIO DISPATCH ROOM handles service requests from customers and relays them to trucks

ther instruments atop the service building help dispatchers to learn the consumers needs ahead of time.

Storage Facilities . . . Centralized storage facilities include an operating warehouse with 40,000 sq ft of indoor area, combined with 63,000 sq ft of platform, and more than 180,000 sq ft of grade level storage area. Special lighting of loading platforms permits trucks to be loaded at night and ready for crews in the morning.

In the electric meter and test building are housed all equipment for testing, repairing and calibrating electric meters and other electric equipment.

A general shops building furnishes facilities such as blacksmith shop, carpenter shop, machine shop, and also a detanking house to handle large transformers.

The transportation building provides repair and services for the numerous trucks, cars and vehicles.

Future plans include construction of an administration building for the operating and service departments, a commercial warehouse for the storage of household appliances, and a gas meter shop for testing calibration and repair of all gas meters.

Co-op Wins Case

East Kentucky Rural Electric gets PSC permission to build transmission network

Kentucky Public Service Commission has authorized East Kentucky Rural Electric Cooperative Corporation to build a 597-mile transmission network to distribute power from its generating plant to member cooperatives in 62 east Kentucky counties.

Still pending before the commission is an application of East Kentucky to build an additional 798 miles of lines and increase the capacity of its generating plant at Ford, in central Kentucky, from 40,000 kw to 80,000 kw.

The commission's latest decision was a hands-down victory for the co-op after 2½ years of spirited litigation.

Application Filed in '50 . . . On Dec. 14, 1950, the commission approved East Kentucky's application for a permit to build a 40,000 kw generating plant at Ford and a 597-mile power network to distribute the current. It was opposed by Kentucky Utilities, Louisville Gas & Electric, Kentucky-West Virginia Power, and Union Light, Heat & Power Companies.

Private electric companies opposing expansion of REA financed co-ops in Kentucky appealed to the courts. East Kentucky's victory was upheld by Franklin Circuit Court.

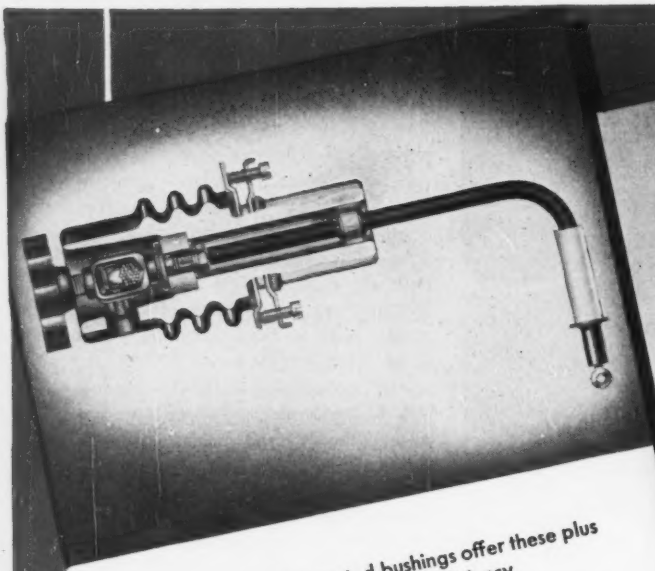
The Court of Appeals approved the power plant, but sent the question of 400 of the 597 miles of lines back to the commission with instructions not to approve any portion that would wastefully duplicate existing facilities.

The commission replied this week that even in areas where it appeared there might be duplication, "existing lines (of protesting utilities) were already overloaded, were of such high voltage that they could not economically be tapped, or were inadequate in capacity . . ."

The four utilities proposed this spring to combine their generating and transmission facilities with those of East Kentucky. The commission, however, turned thumbs down on this counter-proposal. It branded the integrated plan unfeasible, and said:

"It would cause East Kentucky to lose control over the flow of energy necessary to render adequate service over the entire system."

PLUS FEATURES



Moloney sidewall mounted bushings offer these plus features for greater operating efficiency.

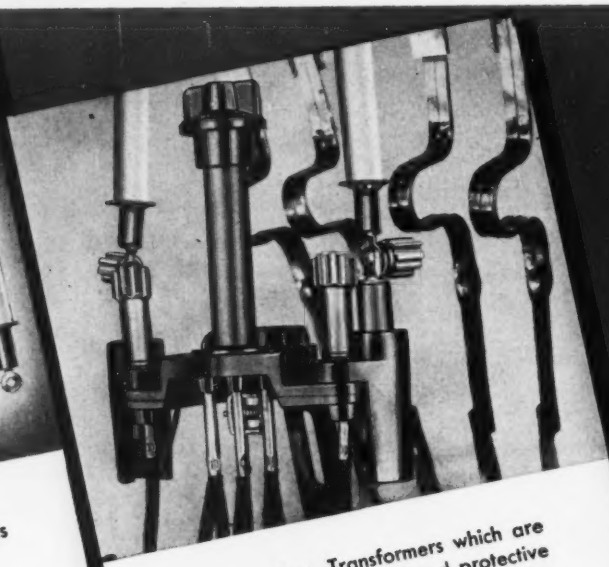
1. Time saving safety feature. Combination protective cap and tightening knob. No tools needed ... no live parts exposed.

2. Tapered connector opening for easy entry of connector. Of particular advantage when stranded wire leads are used.

3. Connector opening large enough to accommodate two connectors of maximum size required by NEMA.

4. Lead opening holes on both sides of porcelain permit connection of leads from either side of bushing.

5. Tapped hole is provided for gap setting when lightning arrester is used.



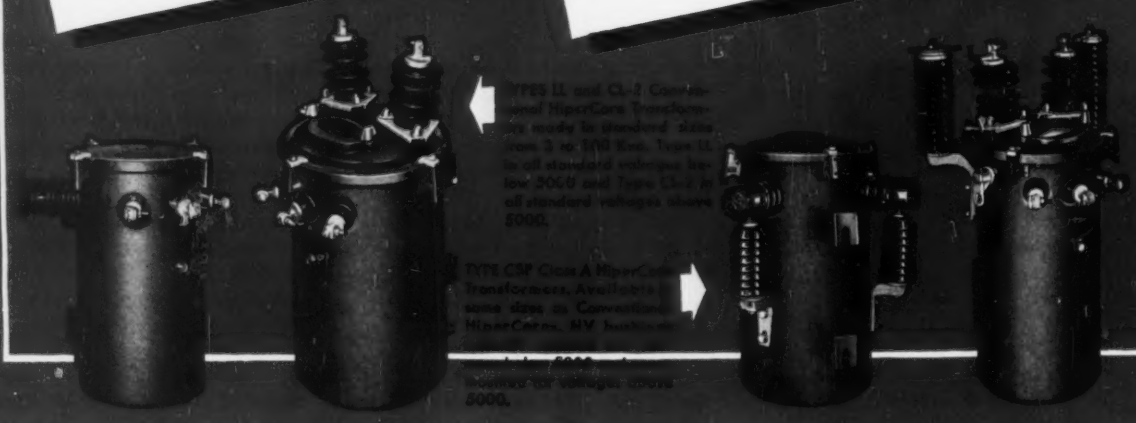
Moloney HiperCore Transformers which are equipped with internally mounted protective fuse links have these exclusive superior features.

1. Links reached easily through handhole opening in transformer cover.

2. Links easily changed without use of tools. The entire unit lifts out after unscrewing anchoring knob.

3. Complete new unit fits into keyed position. Cannot swing in either direction. Tightening knob completes circuit and transformer is then ready to be placed back in service.

4. No lost time due to fittings being dropped into tank. Just snap into position — tighten knob — restore service.



OF MOLONEY *HiperCore* TRANSFORMERS

ADD THESE FEATURES TO THE LONG LIST OF REASONS WHY ENGINEERS SAY . . .

HiperCore is better!

The features described on the opposite page are but two of a long list of sound reasons why HiperCore Transformers are a better buy for your distribution system.

Basically, the Moloney HiperCore Transformer design has proved to be superior for all-around system performance not only in the laboratory but in actual operation.

HiperCore "Balanced Performance" Transformers offer these additional plus features —

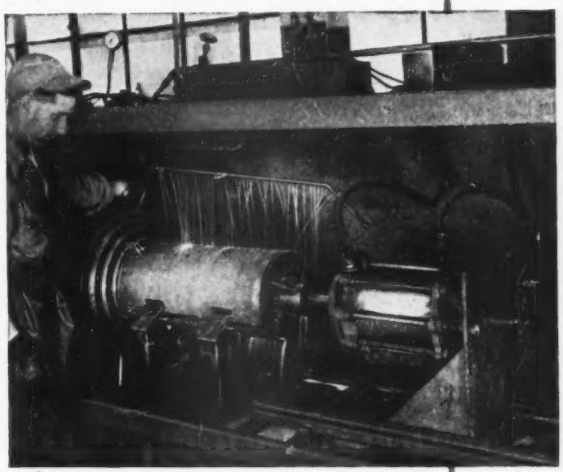
1. **Lighter Weight—Smaller Size.**
2. **Better Voltage Regulation.**
3. **Improved Short-Time Overload Capacity.**
4. **Surge-Proved Core-And-Coil Design.**
5. **High Short Circuit Strength.**
6. **Pressure Tested Sealed Tank Construction.**
7. **Long-Life Weather Resistant Tank Finish.**

ME52-21

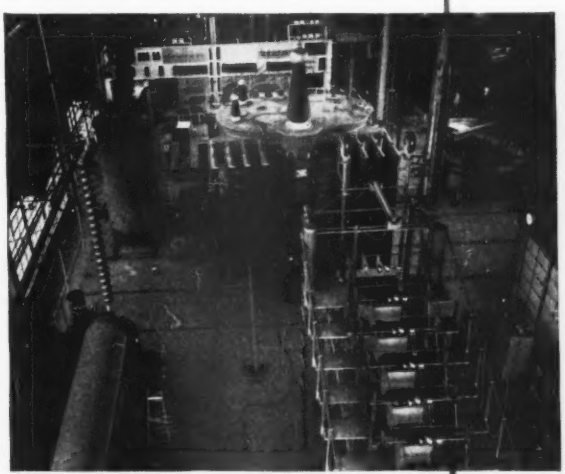
MOLONEY ELECTRIC COMPANY

Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control Transformers Step Voltage Regulators • Unit Substations

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS, MO. AND TORONTO, ONT., CANADA



All Moloney Distribution Transformer Tanks, as well as all Power Transformer Tanks, are pressure-tested before they are painted. The tank openings are sealed and air pressure is applied within the tank. While the tank is rotated, a spray over the outside of the tank reveals imperfections, such as pin-hole leaks, which would cause the tank to be rejected for failure to measure up to Moloney specifications.



Moloney HiperCore Transformers are of surge-tested design, tested on Moloney's 3,500,000 volt surge-generator. The surge-tests simulate the most severe types of operating conditions that could possibly be encountered in field service. Periodic quality tests are also made to insure that production standards are being maintained.

MOLONEY ELECTRIC = { BETTER PERFORMANCE / GREATER RELIABILITY / LESS MAINTENANCE

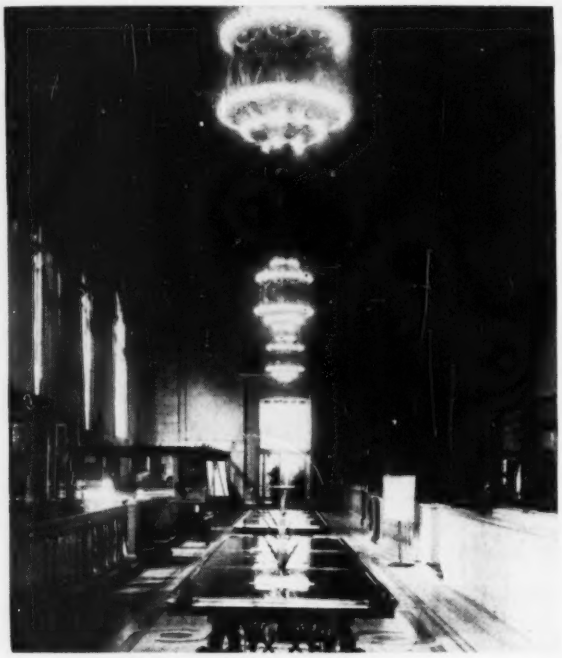
Bank Relighting Blends into Architecture

Consolidated Edison engineers modernize illumination without apparent changes by hiding lamps in chandeliers and ceiling

STEPHEN D. SNOOK
JOHN F. GUNTHER
Consolidated Edison Co of N. Y.

How to modernize lighting without appearing to change it was the problem solved by lighting engineers of the Consolidated Edison Co of New York in brightening the banking floor and ceiling of Manufacturers Trust Co in Brooklyn.

Old installation in the 37-year-old building of Italian Renaissance achitectural style consisted of 18 kw of lighting in three chandeliers and tellers' cage lighting. Each of the chandeliers was equipped with 25-w inside frosted lamps, which provided an overall level of 6 ft-c. Lighting over the tellers' counters consisted of two 60-w lamps per station, providing an additional 10 ft-c at the counters.



BEFORE: Plenty of lamps, but not much light . . .

AFTER: Not so many apparent lamps, but plenty of light

Hidden Improvements . . . Aim of the modernization was to increase general illumination to 35 to 40 ft-c, and to 75 to 100 ft-c on the counters. This was to be done while leaving the chandeliers as the only apparent source of light.

To accomplish this a down-light was located in each octagonal coffer directly above the center line of the counters, and was mounted above an octagonal ceiling plate with a 6-in. aperture, decorated to the design of the existing ceiling treatment. The plate was installed on the underside of the ceiling, and was fastened to the structure above. As well as serving to remove the weight from the ceiling, the plate braced the plaster ceiling by transferring some of the weight to the structural members.

Each down-light was equipped with a 750-w, T-24 bipost lamp. The units were cut off at 45 deg. and baffled to avoid a scalloped effect on the walls.

Tellers' and wall counters were equipped with troffers installed end to end and containing two rows of T-6 fluorescent lamps operating at 300 MA. The custom-built units were installed as integral parts of the counters. They contain porcelain enamel reflectors and louvered glass panels to shield the lamps.

Chandeliers Dimmed . . . It was also decided to lessen glare caused by the chandeliers. To do this low brightness A-17 15-w inside ivory finished lamps operating at about 10 v under voltage were installed to replace the 154 25-w lamps operating at normal voltage in each chandelier.

To brighten the ceiling area, which could not be cleaned for fear of damage, a metal pan was installed in the top of each chandelier in sections and eight 300-w flood lamps were put in. Four 150-w lamps were located at the outer rim of the pan. This lifted brightness of the walls from the former one-half to 5½ ft-L, and to 3 ft-L at the zenith of the arch.

As a result of the work designed by the authors, brightness of the ceiling averages from 3 to 4 ft-L and of the walls from 5-6 ft-L, while general lighting intensity is 35-to 40 ft-c and 75-to 100 ft-c at the counter areas.

FOUR out of five of these stores now maintain display window lighting until 1 a.m. instead of turning it off three hours earlier

Build Night Window Lighting with Traffic Count

DOUGLAS JOHNSON, Advertising Representative, Sacramento Municipal Utility District, California

By getting customers to keep their show-window lighting on further into the night, Sacramento Municipal Utility District is building profitable off-peak load. For a little more than three hours' work, the District gained an additional 556 kwhr per month.

Reasoning that window shoppers eventually become buyers, the utility's promotion men made a traffic count in a two-block area of downtown Sacramento between 10 pm, after most lighting went off, and 1 am. Over 5,000 potential shoppers were counted. These one-night statistics convinced 17% of the area's store owners they should maintain their lighting until 1 am.

This additional lighting costs them an average of less than one cent an hour. Per 100 window shoppers, overall average cost came to about 0.3¢. Traffic count was taken from center of each block and from both sides of the street. Because vehicle traffic was sparse and riders could easily view store windows, automobile occupants also were counted. SMUD plans to expand the program to other downtown blocks and shopping areas this fall.

Electric Heat Solves A Sticky Problem

Getting molasses out of barrels in cold weather and mixing it uniformly with other dairy feed is a constant problem to farmers. Delta Co-op Assn., a farmers' marketing and purchasing group, solved it in the association's feed plant in Ladner, British Columbia, by the use of electric heat. The barrel is warmed in an insulated cabinet furnished with 4,000-w strip heaters.

Box temperature is controlled by thermostat ordinarily set at 110 deg. F. and it takes four hours to warm a cold barrel to point where molasses is thin enough to use. Delta mixes 120 lb of molasses to ton of dairy feed and uses two or three barrels per day. Assisting with installation of the warmer was William Lowe of the British Columbia Electric Co.

STRIP HEATER molasses warmer is loaded with cold product. Heating takes about four hours

DISTRIBUTION TRANSFORMERS
different from others because.....
NEW

.....Magne-valve arrester

(gapped valve-type) can be used any place on your system...regardless of short-circuit currents

Small in size and light in weight, the new General Electric Magne-valve arrester has impulse characteristics similar to those of G.E.'s modern pellet arrester—the quality standard of performance in the electrical industry. The new arrester—gapped to the bushing in the same manner as modern pellet arresters on unit-type 2400- and 4800-volt transformers—is now standard on all G-E EEI-NEMA 7200- and 7620-volt unit-type transformers.

NEW ARRESTER FEATURES:

Valve action—Thyrite* valve action is augmented by magnetic action of an internal series gap.

External gap—No 60-cycle voltage across arrester under normal operating conditions—no chance for grounding circuit if arrester is damaged.

Elimination of unnecessary breaker tripping—Unlike expulsion-type arresters, there is no short circuit during discharge and no erosion to limit the useful life of the arrester.

Small size and light weight—9-kv arrester, for 7200-volt transformer, is only 14¼" long, weighs only 10 pounds.

REMEMBER . . . all transformers are not alike . . . compare the General Electric plus features in the chart below and see for yourself.

For more information contact your nearest G-E sales office or agent, or write General Electric Company, Section 431-9, Schenectady 5, New York.

*Reg. trade-mark of General Electric Company

You can put your confidence in—

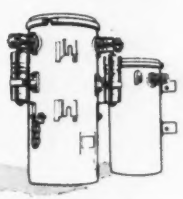
GENERAL ELECTRIC

ALL TRANSFORMERS ARE NOT ALIKE

(make this simple comparison and see)

FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	YES	NO	NO	NO	NO	NO
Nitrile rubber gaskets at all tank openings	YES	NO	NO	NO	NO	NO
Strenicor pressure terminal clamps	YES	NO	NO	NO	NO	NO
Insulated clamp-type connectors on tank wall hv bushings	YES	YES	YES	NO	YES	YES
One-piece cover band	YES	NO	NO	NO	NO	YES
Gapped valve-type arresters	YES	NO	NO	NO	NO	NO
Nationwide company-operated service facilities	YES	YES	NO	NO	NO	NO

1878 75 1953 YEARS OF ELECTRICAL PROGRESS



UNIT-TYPE CONVENTIONAL

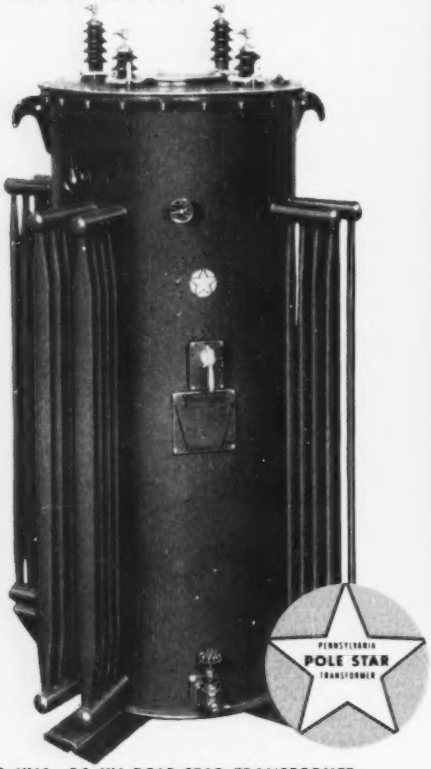
"Take your choice G.E. makes both"

"Crimped Connections are Best....

THAT'S WHY WE USE THEM ON THE POLE STAR"

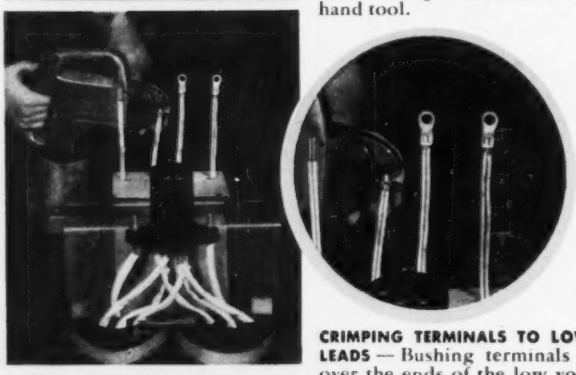
says Joseph Yeskevitch, *Pole Star Assembler*

Pennsylvania engineers believe that crimping makes the finest electrical and mechanical connection. Therefore, wherever possible, connections in the electrical circuit of the Pole Star are made with crimping tools. Neither age nor vibration will deteriorate a crimped connection. Since no heat is applied, no crystallization of the wire can take place to weaken the wire and cause possible breakage. Furthermore, crimping helps eliminate the ever-present element of human error and gives added assurance of the reliability of Pennsylvania Pole Star Distribution Transformers.

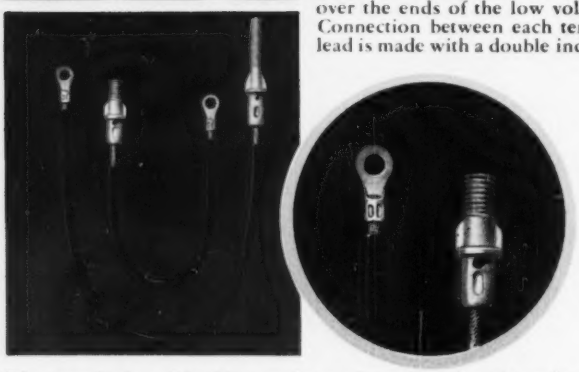


500 KVA, 34 KV POLE STAR TRANSFORMER
Pole Star transformers are available in ratings from 3 Kva through 500 Kva and in voltages from 2400 volts through 43,800 volts.

CRIMPING HIGH VOLTAGE COIL LEADS TO TAP CHANGER — Insulated stranded wire leads from coil are covered with plastic tubing. Wire is inserted into hollow copper studs of tap changer. A double indent crimp is made with a pneumatic hand tool.



CRIMPING TERMINALS TO LOW VOLTAGE LEADS — Bushing terminals are placed over the ends of the low voltage leads. Connection between each terminal and lead is made with a double indent crimp.



Ring terminals and bushing studs are also crimped to the ends of each high voltage bushing cable. A double indent crimp is made at the terminal end. A single indent crimp combines bushing stud and cable. The stud is provided with an inspection hole to make certain that the wire is inserted an adequate distance into the terminal.

Pennsylvania Transformer Company

A McGraw Electric Company Division

Canonsburg, Pennsylvania • *Greater Pittsburgh District*

UWUA Looks to a Merger . . .

. . . with other unions in the CIO or with IBEW-AFL. UWUA President Fisher says IBEW has offered "nothing attractive"

CIO's Utility Workers Union of America is looking over prospects of merging with another union, either Congress of Industrial Organization or American Federation of Labor.

Discussions have been held with the AFL International Brotherhood of Electrical Workers, its rival in the electric industry, and with some CIO affiliates. UWUA Pres Joseph Fisher would not identify the CIO unions, but one of them is reported to be the Communications Workers of America. CWA operates in the telephone industry.

Eventual Merger . . . Fisher said the discussions were the result of a resolution of his union's convention last April and the recent agreement between the AFL and CIO on the principles of a "no raiding" pact as a first step toward eventual merger of the two labor federations.

The convention resolution authorized UWUA leaders to meet with leaders of other CIO and AFL unions to discuss the possibility of merger. Any merger, however, would have to be approved by a special UWUA convention.

Two exploratory meetings have been held in Washington with an IBEW group headed by IBEW Pres Daniel W. Tracy, according to Fisher. Another is planned for sometime in the middle of July.

"Nothing Attractive" Offered . . . Fisher is not optimistic. IBEW offered "nothing attractive" to UWUA—"no basis on which we could possibly reach agreement," he told Electrical World.

Tracy could not be reached for comment. With 500,000 members, IBEW apparently is not inclined to make any concessions to its 80,000-member UWUA rival in the electric power industry.

IBEW also competes with CWA in the telephone industry and with the CIO International Union of Electrical Workers in the electrical manufacturing industry. UWUA-CIO has not discussed merger with the 300,000-member IUE.

A merger with CWA would be more logical. Both are in utilities. CWA claims about 300,000 members in the telephone field.

The CIO denied reports that three of its affiliates—utility, brewery, and meatpacking workers—are planning to merge with AFL unions. These unions have merely "been exploring the possibility of reaching no-raid agreements with AFL unions in the same field," according to John Riffe, CIO executive vice president and director of organization.

No-Raid Pact . . . This is related to the no-raid agreement worked out between the AFL and CIO to take effect next January, Riffe said. It will help create organizational stability and free more personnel for organizing activities, he added.

In the meantime John L. Lewis, president of the United Mine Workers, and David J. McDonald, head of the United Steelworkers of America, CIO, held a secret meeting in Washington. They also scheduled further meetings in the future. There were no details on the meeting but it was reported there had been "no discussion of merger at the moment."

Just before sailing for Stockholm, Sweden, to attend the International Confederation of Free Trade Unions convention, Walter P. Reuther, president of the CIO, denied a report that a meeting between Lewis and McDonald had for its objective the possible withdrawal of the United Steelworkers of America union from the CIO.

On this point, Reuther said, "stories of impending disintegration have been appearing since 1937, but we have grown stronger since those days. We are negotiating for a merger with the AFL. We have already solved one of the most difficult obstacles and reached an agreement on no-raiding of each other's unions for members. There remains now only the solution of the basic problems of jurisdiction."

CIO Packinghouse Workers and the AFL Meat Cutters have been working jointly on a bargaining program in the meat industry this year and have discussed possible merger.

Two Factions . . . The CIO Brewery Workers are split into two factions. The AFL Teamsters have held discussions with one faction headed by the Brewery Union Pres Karl F. Feller. There has been bitter rivalry between the two unions in the brewery industry. It is reported that either the Feller or the anti-Feller faction in the CIO Brewery Workers might be absorbed by the Teamsters. A few months ago the teamsters took in a dissident local of IUE-CIO at Minneapolis, Honeywell Regulator Co at St. Paul.

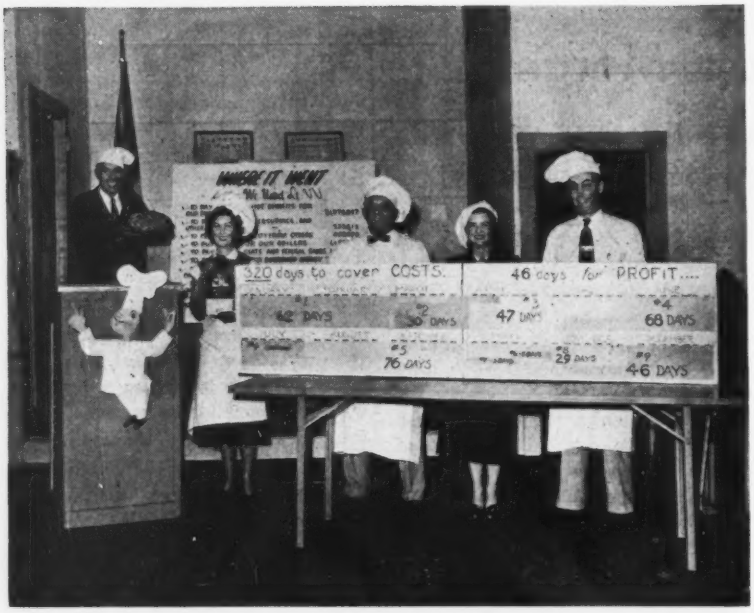
A no-raiding agreement in effect four years between the CIO Automobile Workers and AFL Machinists was enlarged recently to include joint action on bargaining where both unions have contracts with the same employer.

LABOR BRIEFS

Executive Training, Inc, an affiliate of Rogers, Slade & Hill, 342 Madison Ave, New York 17, will hold its "Summer Institutes on Management Development" at High Point Inn, Mt. Pocono, Pa., from Aug. 17 to Sept. 4.

Knoxville (Tenn.) Utilities Board has reached a new agreement with its electricians. General Manager Mark Whitaker said the labor negotiations ended in an agreement which carried no general wage change, but only some fringe benefits.

Long Island Lighting Co and Local Unions 1049 and 1381 of the International Brotherhood of Electrical Workers, AFL, agree to a general wage increase of 5% and other changes in contract benefits which went into effect July 1. Local union memberships have ratified the agreement . . . **National Labor Relations Board** will have three board vacancies by September 1, when Paul L. Styles resigns as a member.



Cambridge Electric's 1952 Pie Chart

Putting on a sort of "poor man's light opera," Cambridge Electric Light Co's "Cooks and Bakers" presented a skit for the employees titled "Figures Don't Lie," or "A Piece of Pie for Everyone." It covered the utility's 1952 operations and showed the graphic breakdown of expenses.

Characterized as an annual "rhubarb pie" report, the "cooks" presented it with a tic-tac-toe board for the pie's crust, but substituted figures for the tender and butter-sweet rhubarb. One kwhr of electricity produced by the company was represented by the "pie." The cast then acted out the amount of pies made in 1952, the various ingredients which went into the production, and the overall amount of money received from their sale. The "ingredients" were then charged against total figure of $6,396,146.

The cast shown above, from left to right, were: Chef, Harding U. Greene, vice president and general manager; First Cook, Kathleen McGlauflin, commercial office; First Baker, Albert Shepard, steam plant; Second Cook, Katherine Rinehart, home service; and Last Cook, William Patterson, steam department.

Denver Citizens Vote for State PUC Regulation

Denver voters in a special election recently authorized the Colorado Public Utilities Commission to regulate all utilities in Denver, a home rule city which has not been subject to state PUC regulation.

At the same time voters rejected a proposal for establishment of a city public utilities commission to regulate utilities within the Colorado capital city. The vote approving state PUC control was 31,313 to 16,841. The city PUC proposal was rejected 27,410 to 18,179.

Pres John E. Loiseau of the Public Service Co of Colorado commented: "Officials of the Public Service Co which operates the electric, gas, and steam heat utilities in Denver feel that the placing of regulation of Denver utilities under the state commission goes a long way toward clarifying the entire regulatory situation in Colorado."

Loiseau noted that the two proposals "were occasioned by the confusion existing in Denver, a home rule city, with respect to the manner in which regulation should be effected."

The state commission was created in 1913 and has had complete regulatory power except in home rule cities. Last fall, Colorado voters rejected, 203,732 to 173,652, an amendment which would have given the state PUC authority over all utilities except those municipally owned.

A session of the Colorado legislature in March voted to submit to voters again in 1954 a proposed constitutional amendment to give the state PUC complete jurisdiction over all utilities, whether or not they are in home rule cities. Most of Colorado's population is in home rule cities. A 1950 compilation showed that the state PUC in that year had jurisdiction over electric service to only 38% of the state's residents.

Court Will Rule on Right of PUDs to buy Puget P&L

The Washington State Supreme Court has taken under advisement oral arguments in a case challenging the right of five public utility districts to buy properties of Puget Sound Power & Light Co.

Ed Roehl of Wenatchee, fruit grower and shareholder in a private power company, maintains the 1949 power law authorizing two or more PUDs to acquire private power facilities is unconstitutional because of the method by which it was enacted. He asked the court to look behind the 1949 law, claiming the scope and object of the original bill was changed when the PUD provisions were added to another bill.

Judge Jay A. Adams ruled against Roehl in the Chelan County Superior Court but Roehl, in appealing to the state supreme court, maintained that Judge Adams erred on 25 counts in his decision.

Roehl said the 1949 bill started out as a House measure containing authority for PUDs to make payments to school districts in lieu of taxes. To this was added the contents of two bills which had not been able to win approval as separate measures, one authorizing two or more PUDs to buy private utility properties, the other creating a state power commission, said Roehl.

Attorneys for the PUDs contended the court cannot go into the legislative record of a bill but must accept the enrolled bill as having been properly

enacted in compliance with the state constitution. They asserted the "enrolled bill rule" was adopted in Washington in 1893 and has been consistently followed in every case since, thereby preventing the court from considering Roehl's challenge as to whether the bill had been improperly amended while going through the legislature.

Constitutionality of the law already has been upheld once by the state supreme court.

FINANCIAL BRIEFS

Electric Energy, Inc, has asked the Securities and Exchange Commission approval to sell $30 million first mortgage sinking fund 4½% bonds due in 1979 to two insurance companies . . . **Pacific Gas & Electric Co** has asked Federal Power Commission approval to acquire Vallejo Electric Light & Power Co, a wholly owned subsidiary . . . **Iowa Public Service Co** has received a franchise renewal in Irwin, Iowa, after the citizens voted 56-to-4 in favor of it . . . **Public Service Co of Colorado** will pay Aug. 1 a quarterly common stock dividend of 40¢ a share as compared with 35¢ previously.

Standard Gas & Electric Co will file amendments to its plan with the Securities and Exchange Commission for permission to distribute one share of Duquesne Light Co common stock for each four shares of Standard's common . . . **Washington State Public Service Commission** has moved the hearing on the proposed merger of the Puget Sound Power & Light Co with the Washington Water Power Co from Olympia to Seattle. The hearing is set for July 6. The change was made because of a convention in Olympia which would have made it difficult for persons attending the hearing to obtain hotel rooms, said W. E. Anderson, chairman of PSC.

REGULATION

Commonwealth Edison Co has asked Illinois Commerce Commission approval to increase rates by approximately $16,450,000 a year for electric customers and $2,900,000 a year for gas consumers.

Today in Utility Finance

YIELDS (%)

Quality	Bonds 1st	Bonds 2nd	Bonds 3rd	Preferred Stocks 1st	Preferred Stocks 2nd	Preferred Stocks 3rd	Common Stocks 1st	Common Stocks 2nd	Common Stocks 3rd
DATE									
1953									
June 25	**3.34**	**3.46**	**3.64**	**4.47**	**4.70**	**4.88**	**5.52**	**5.93**	**6.10**
June 18	3.37	3.54	3.68	4.53	4.70	4.90	5.53	6.03	6.20
END OF QTR.									
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months	Ended	Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Alabama Power	12	May	$12,050,041	$11,641,508	$....	$....
Georgia Power	12	May	12,109,004	10,901,288	....	....
Gulf Power	12	May	1,891,494	1,466,005	....	....
Iowa Southern Utilities	12	May	1,329,137	808,217	1.91(a)	1.19(a)
Middle South Utilities, consolidated	12	May	13,797,178	11,612,541	1.87(b)	1.84(b)
Minnesota Power & Light	12	May	3,645,884	3,527,684	....	....
Mississippi Power	12	May	2,169,833	1,930,743	....	....
Portland General Electric	12	May	3,654,645	3,570,779	2.44(c)	2.76(c)
Southern Canada Power	8	May	946,661	797,324	....	....
Southern Co, consolidated	12	May	20,852,183	19,123,179	1.15(e)	1.19(e)

Notes—(a) Based on 616,685 shares in 1953 and 554,739 shares in 1952; (b) Based on 6,689,583 shares in 1953 and 6,150,000 shares in 1952. Excludes tax reduction due to Amortization of Emergency Facilities; (c) Based on 1,500,000 shares in 1953 and on the average number of shares outstanding in 1952; and (e) Based on 18,087,643 shares in 1953 and 16,072,159 shares in 1952.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF JUNE 25—JULY 1			
Bonds			
Puerto Rico Water Resources Authority—electric revenues due 1955-1988	$21,000	various	2.80-4.75%
Pennsylvania Electric—1st mtg 4⅛% due 1983	12,500	102.172%	4.00
SCHEDULE FOR JULY—AUGUST—SEPTEMBER			
Bonds			**Bid Date**
Commonwealth Edison—1st mtg due 1983	$40,000		July 8
Consumers Power—1st mtg due 1983	25,000		July 16(b)
Metropolitan Edison—1st mtg due 1983	8,000		.....
Western Light & Telephone—1st mtg due 1983	3,000(c)	.....	.....
Debentures			
Central Hudson Gas & Electric—conv debs	$6,000	.....	.....
Common Stock			
Boston Edison—246,866 sh (to be offered commonholders on 1-for-10 basis record about July 16 to expire about Aug. 3)	$.....		.....
Central Hudson Gas & Electric—140,000 sh (to be offered commonholders on 1-for-15 basis)	.....		.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Bonds			
Eastern Utilities Associates—collateral trust	$7,000	.....	.....
Monongahela Power—1st mtg	10,000	.....	.....
Public Service Electric & Gas—1st mtg due 1983	50,000	.....	.....
Louisiana Power & Light—1st mtg due 1983	12,000	.....	.....
Kansas Gas & Electric—1st mtg due 1983	10,000	.....	.....
Southern California Edison—1st mtg	25,000	.....	.....
Southern Indiana Gas & Electric—1st mtg	5,000(e)	.....	.....
Preferred Stock			
Kansas Gas & Electric	$5,000	.....	.....
Southern California Edison	15,000	.....	.....
Common Stock			
Iowa-Illinois Electric & Gas	$6,000(a)	.....	.....
Wisconsin Power & Light (probably on a 1-for-7 basis)	.....	.....	.....
Wisconsin Public Service	.....	.....	.....

Notes—(a) To sell enough common stock to yield $6 million; (b) Morgan Stanley & Co will offer the bonds to the public in a negotiated deal; (c) Harris, Hall & Co group, underwriters; and (e) Estimated.

Favors Westinghouse Bid

Detroit Public Lighting Commission suggests city council accept firm's price for Mistersky Station generator

Hopes of Brown Boveri Corp, Switzerland, cutting more deeply into the U. S. market were set back immeasurably in Detroit where the foreign firm had entered the low bid for construction of a 50,000-kw steam turbo-generator to be installed in the city's Mistersky Station.

The Detroit Public Lighting Commission last week voted unanimously to recommend to the city council that the bid of Westinghouse Electric Corp be accepted, even though the Westinghouse bid is $650,000 higher than Brown Boveri. The latter company had entered a $1,296,000 bid, against the $1,946,500 bid by Westinghouse (EW, June 1, p 150).

Consulting Firm Report . . . The commission based its decision largely on the report it received from its consulting firm, Burns & Roe, Inc, New York. The Westinghouse bid, the firm said, represents the "highest overall economy" despite the price differential. The main count against the Swiss firm was that it has not previously made equipment of the size needed in Detroit nor for the temperatures and pressures demanded of the equipment.

The Brown Boveri generator failed, said the consultants, "in its basic design to comply in important respects to the specifications." Burns & Roe noted that Brown Boveri has built or has on order 25 hydrogen-cooled generators of approximately the size needed in Detroit but only three are operating.

"Lack of experience is clearly to their detriment," the Burns & Roe report added.

Station Alterations? . . . As had been cited by city officials when the bids were first opened, the consultants noted that the Swiss design embodies a number of features which have been tried and discarded by U. S. companies because they operated unsatisfactorily or because better methods have since been developed. City officials called attention to the fact that part of the present Mistersky Station would have to be torn down and reconstructed at an estimated cost of $200,000 in order to house the Swiss generator.

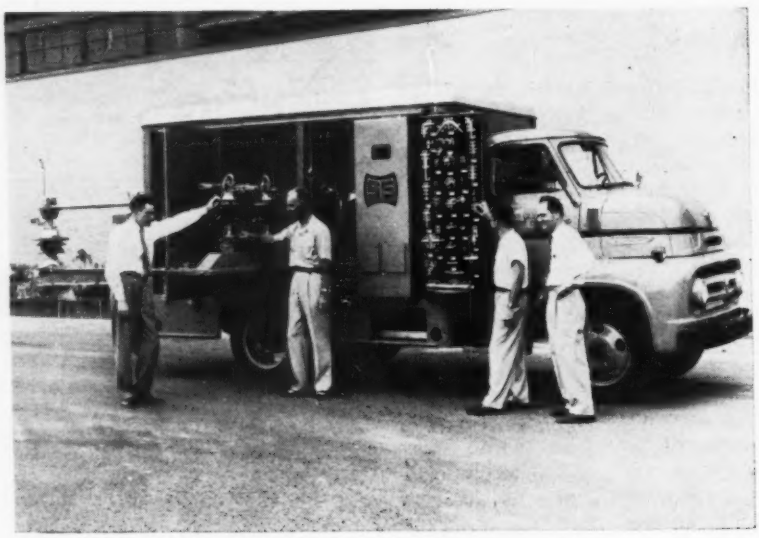
C. Allen Harlan, president, Harlan Electric Co, Detroit, which submitted the Brown Boveri bid, told Electrical World at press time that he received from the Detroit Public Lighting Commission a letter dated June 29 denying his request that the commission's recommendation be delayed 48 hours. Request for the delay was made by Harlan in order that he might have the opportunity to defend the Swiss firm.

Requests Hearing . . . Harlan last week revealed that he was forwarding to the city council a letter, in which he was requesting a hearing before that body on the turbo-generator bid case.

He further stated that he did not know just how soon the hearing would be held.

The Harlan official said the city council probably will consider this week at its regular Tuesday night meeting the Purchasing Department's request, with or without recommendations, to purchase the Westinghouse equipment.

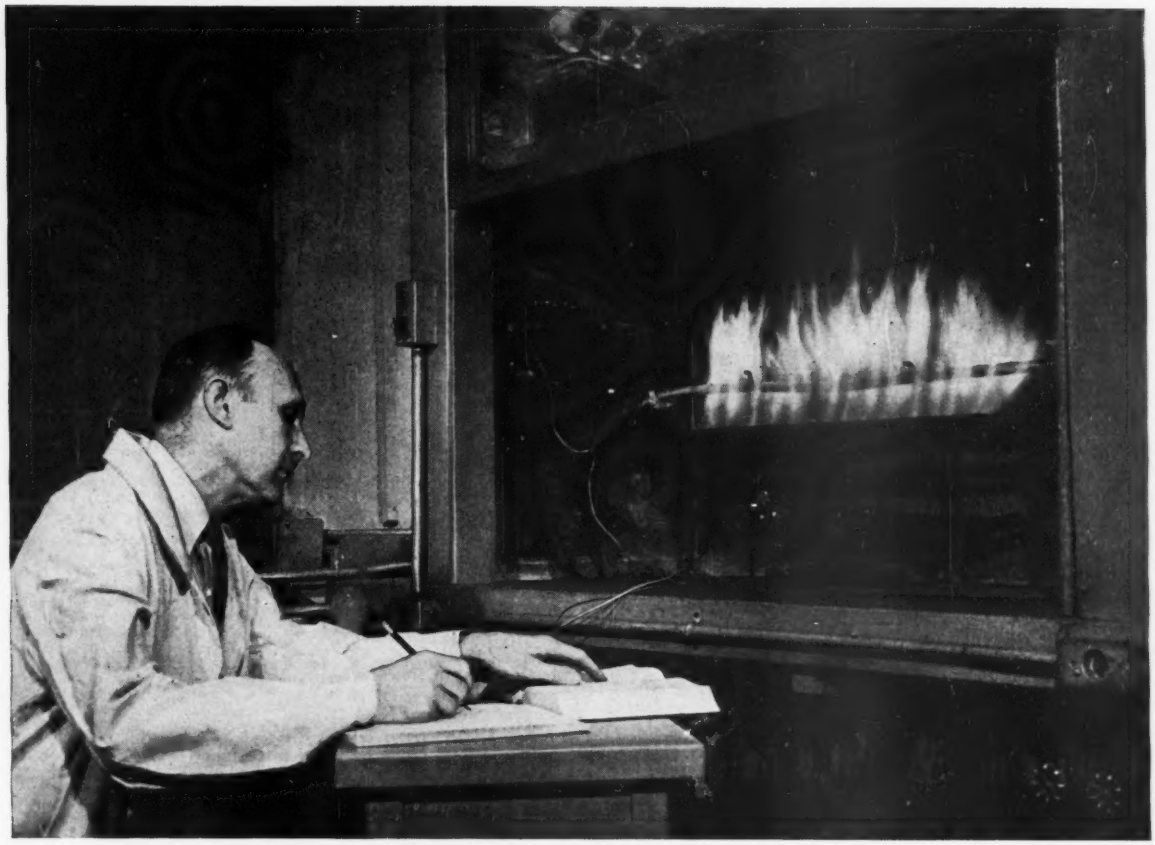
Harlan earlier had asked that some competent engineer from the University of Michigan, Wayne University, or the University of Detroit be included among the consultants. He pointed out then that one of the two consulting engineers—Prof Carl Soderberg, Massachusetts Institute of Technology—was a former employee of many years for Westinghouse. The second consultant was Stewart L. Henderson, a New York designer and engineer.



Electrical Display Unit Takes to Road

Southern States Equipment Corp, Hampton, Ga., has just put into service the new mobile display unit shown above. This truck will cover thousands of miles within the next few months demonstrating to utility engineers Southern States' complete line of electrical transmission and distribution equipment.

Inspecting the equipment are left to right: John M. Tomme, field engineer; T. A. Burdeshaw, sales manager; Robert M. Chastain, field engineer; and T. H. Ellison, district representative.



New cable withstands 1400 F flame for 24 hours in grueling laboratory test.

You can protect vital circuits against fire with NEW G-E silicone-rubber-insulated control cable

Adds Years to Life of Cable Used in High-Temperature Applications

General Electric's new control cable, for installation in extremely high ambients, will maintain circuit integrity even in case of severe fire along the cable run. In addition to withstanding tremendous heat (maximum ambient temperature for continuous operation is 257 F), the new G-E cable has an insulation that has the moisture resistance of the best grades of rubber—a combination never before possible.

No special tools or fittings are required to handle the new cable. Installation practice is generally the same as with any other rubber-type cable.

For vital control circuits in power stations, around boiler rooms, or in high-temperature processing operations, you should investigate G-E cable number SI-58134. See your G-E Wire and Cable specialist, or write to Section W88-727, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

You can put your confidence in—

1878 75 1953 YEARS OF ELECTRICAL PROGRESS

GENERAL ELECTRIC

MANUFACTURING BRIEFS

Baldwin-Lima-Hamilton Corp has received a $853,250 contract from Interior's Bureau of Reclamation for construction of four 15½-ft hydraulically operated butterfly valves for the Palisades Power Plant, located on the Snake River, Idaho. Scheduled for delivery by January, 1955, the valves will be used for shutting off flow to the hydroelectric turbines.

Babcock & Wilcox Co's Tubular Products Division has announced revisions in prices covering seamless alloy and stainless, mechanical, and pressure tubes produced at Beaver Falls, Pa. Details of prices are available in revised price schedules being issued by B&W.

Cornell-Dubilier Electric Corp has started production at its new capacitor plant at Sanford, N. C. The new plant, which is nearing completion, will provide 270,000 sq ft of operating space, including a two-story administration building.

Square D Co, Detroit, electrical equipment manufacturers, has opened a new, $300,000 branch plant at Seattle, Wash. In conjunction with the opening of the 25,000-sq ft plant, Square D announced expanded sales coverage for the Seattle district with new offices in Spokane, Wash., and Portland, Ore.

Westinghouse Electric Corp's Sunnyvale, Calif., plant has started construction of a 66,000-kw steam turbine ordered by Utah Power & Light Co for its $10-million steam station to be built in central Utah. The turbine is scheduled for delivery in the summer of 1954 . . . **Westinghouse** has received an order from Southern California Edison Co to supply a 156,000-kw turbine generator for the utility's Redondo Beach Station. The new unit is slated for shipment late in 1954 from Westinghouse's Steam Division plant at South Philadelphia, Pa.

Pyle-National Co, Chicago, manufacturers of electrical and air conditioning equipment, has acquired all tools, dies, molds, machinery, and equipment of M. B. Austin Co, Northbrook, Ill. With acquisition of this equipment, Pyle-National will add electric service entrance fittings to its present line of wiring and lighting products.

Monitor Controller Co plans to transfer its operations early next year from Braintree to Cambridge, Mass. Negotiations are under way to obtain about 250,000 sq ft of floor space at 640 Memorial Drive, Cambridge. Monitor now employs about 300 persons.

SALES ASSIGNMENTS

COMPANY STAFFS

Honan-Crane Corp, Lebanon, Ind., has assigned Francis D. Skelley as sales engineer for the state of New Jersey with headquarters at the firm's district warehouse in Ridgefield, N. J. He formerly served as sales manager of Standard Electronics Research Corp, N. Y.

General Dynamics Corp's Electro Dynamic Division has appointed Douglas S. Birgfeld sales engineer in its Philadelphia district office. Prior to joining the firm he served as a sales engineer with Sterling Electric Motors, Independent Pneumatic Tool Co, and Smith Welding Equipment Eastern Corp.

Midwest Piping Co has made Louis H. Niebling manager of its Chicago district sales office. With Midwest since 1928, Niebling has served as director of controlled materials since 1951. Walter Janesch, a sales representative in the St. Louis office, was named Niebling's assistant.

General Electric Co's Trumbull Electric Department has assigned Alfred E. Carpluk to the sales engineering staff of its Boston office. Carpluk, who began with GE in 1949, replaces J. J. Jamison, recently called to active duty with the Navy.

Libbey-Owens-Ford Glass Co's Fiber Glass Division has assigned Arthur S. White to the St. Louis area, which includes Missouri, Kansas, Texas, Arkansas, Oklahoma, Mississippi, Louisiana, and parts of New Mexico and Tennessee. White formerly was a LOF field representative in the Chicago area.

MEETINGS CALENDAR

Electrical Equipment Representatives Association
Summer Meeting, Hotel Colorado, Glenwood Springs, Colo., July 15-17.

International Association of Electrical Leagues
18th Annual Meeting, Fairmount Hotel, San Francisco, Aug. 5-8.

American Institute of Electrical Engineers
Pacific General Meeting, Hotel Vancouver, Vancouver, B. C., Sept. 1-4; Middle-Eastern District Meeting, Daniel Boone Hotel, Charleston, W. Va., Sept. 29-Oct. 1; Fall General Meeting, Muehlebach Hotel, Kansas City, Mo., Nov. 2-6.

Illuminating Engineering Society
National Technical Conference, Hotel Commodore, New York, Sept. 13-17.

Northwest Public Power Association
Accounting Section, Monticello Hotel, Longview, Wash., Sept. 17-18.

Public Utilities Association of Virginias
Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., Sept. 17-20.

Maryland Utilities Association
Fall Conference, Cavalier Hotel, Virginia Beach, Va., Sept. 18-19.

Rocky Mountain Electrical League
50th Annual Fall Convention, Broadmoor Hotel, Colorado Springs, Colo., Sept. 20-23.

***National Association of Railroad and Utilities Commissioners**
Hotel Roosevelt, New York, Sept. 20-26.

***Edison Electric Institute**
Accident Prevention Committee, Radisson Hotel, Minneapolis, Sept. 21-22; Transmission-Distribution Committee, Hotel Nicollet, Minneapolis, Minn., Oct. 8-9; Electrical Equipment Committee, Jung Hotel, New Orleans, La., Nov. 2-3.

Instrument Society of America
8th National Instrument Exhibit, Sherman Hotel, Chicago, Sept. 21-25.

International Association of Electrical Inspectors
Silver Jubilee Meeting, Edgewater Beach Hotel, Chicago, Sept. 21-26.

National Electrical Industries Show
Sponsored by Eastern Electrical Wholesalers' Association. 69th Regiment Armory, New York, Sept. 29-Oct. 2.

American Society of Mechanical Engineers
Fall Meeting, Sheraton Hotel, Rochester, N. Y., Oct. 5-7; Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

Interstate Power Club
Hotel Martinique, New York, Oct. 5; Hotel Martinique, New York, Dec. 7.

Electric League of Western Pennsylvania
4th Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Oct. 6-8.

Indiana Electric Association
Annual Convention, French Lick Springs Hotel, French Lick, Ind., Oct. 7-9.

Association of Edison Illuminating Companies
Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 8-10.

National Association of Electrical Distributors
Fall Meeting, Pacific Zone, Hotel del Coronado, Coronado, Calif., Oct. 11-14.

Iowa Utilities Association
Management Conference, Hotel Fort Des Moines, Des Moines, Oct. 12-13.

Electrical Association of Philadelphia
Biennial Electrical Progress Show sponsored by Manufacturers' Division, Convention Hall, Philadelphia, Oct. 13-15.

American Standards Association
4th National Standardization Conference and 35th Annual Meeting, Waldorf-Astoria, New York, Oct. 19-21.

Public Information Program
Steering Committee, Edgewater Beach Hotel, Chicago, Oct. 21; Workshop Conference, Edgewater Beach Hotel, Chicago, Oct. 22-23.

Southeastern Electric Exchange
General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 19-21.

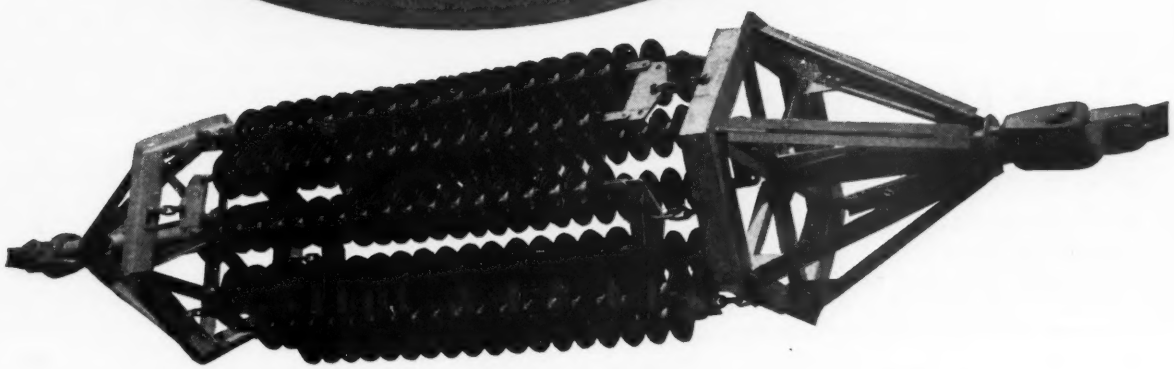
National Electrical Manufacturers Association
Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

Wiconsin Utilities Association
Electric-Gas Section Convention, Schroeder Hotel, Milwaukee, Nov. 11-13.

***Pacific Coast Electrical Association**
Annual Hawaiian Conference, Honolulu, T. H., Nov. 19-20.

*Addition this week.

"O-B" is CHOICE of INSULATORS

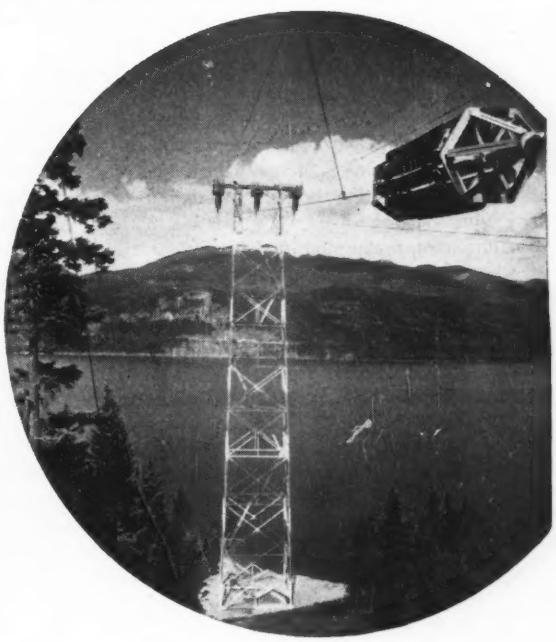


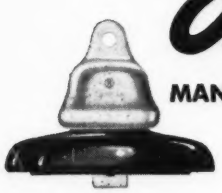
on World's Largest Span

Now, the longest unsupported conductor span in the world -- over two miles -- is carried on O-B suspension insulators. Twelve strings of 18 units each, yoked in a lever-acting, load-dividing assembly, apply a generous safety factor to a computed ultimate strain of 228,000 pounds.

Need we "gild the lily" by pointing to the necessity for dependability in such an application as this? Where nothing counted so much as reliable service, builders of this span put O-B insulators on the job.

Your lines may not impose such spectacular demands on insulation, but whether the need for extra performance is deliberately designed into the job, or may just accidently come along, it is best handled by making O-B YOUR CHOICE OF INSULATORS.

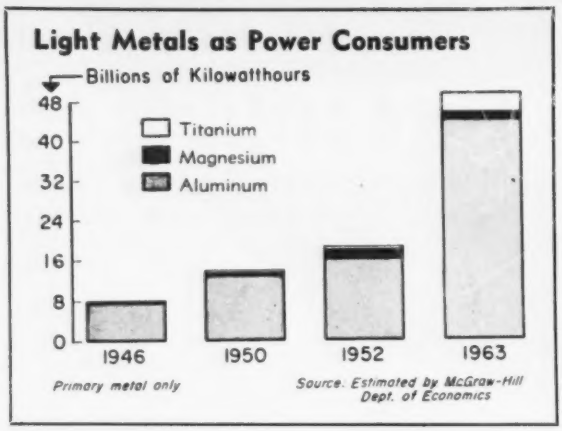




Ohio Brass

MANSFIELD OHIO, U.S.A.

4393-H



Light Metals Boost Power Consumption

Primary metals are still the leading industrial power consumers—and will be in the foreseeable future. Growth in consumption of the light metals—aluminum, magnesium and titanium—is expected to push power consumption of the metals producers to new heights in the near future.

This has been called the age of the light metals. Consumption of aluminum, magnesium and titanium has grown faster than use of older metals like steel, copper and zinc.

Heavy Power Users . . . Since the light metals are also heavy power users, this means more business for the electrical industry. Aluminum production requires about 9 kwhr per pound, magnesium requires slightly more—and titanium uses up as much as 20 kwhr per pound of metal produced.

Three forces in particular are pushing up consumption of these metals. One is technological: The problems of refining and fabricating the light metals into useable forms are gradually being solved. Another is a matter of abundance: Aluminum, magnesium and titanium are readily available, whereas ores of the older metals are becoming relatively more scarce and expensive.

The third force behind the growth in use of light metals lies in their unusual properties. Obviously, they allow for considerable weight saving in structural applications.

The three light metals already rank high among power consuming industries. The chart (above) shows estimates of the amount of power consumed in producing primary titanium, magnesium and aluminum for several recent years and for 1963. An estimated 19 billion kwhr were consumed in producing these metals in 1952.

The figure for 1963—more than 49 billion kwhr—may turn out to be conservative. Some of the companies producing the light metals would undoubtedly regard the estimates of metal use behind the chart as conservative.

Domestic output of primary aluminum for 1963 is estimated at slightly less than 2.6 million tons, as against 937,000 tons in 1952. At an average power consumption of 9 kwhr per pound, that would mean use of more than 46 billion kwhr—only about 7 billion less than the total electric power consumption of all primary metals industries in 1950.

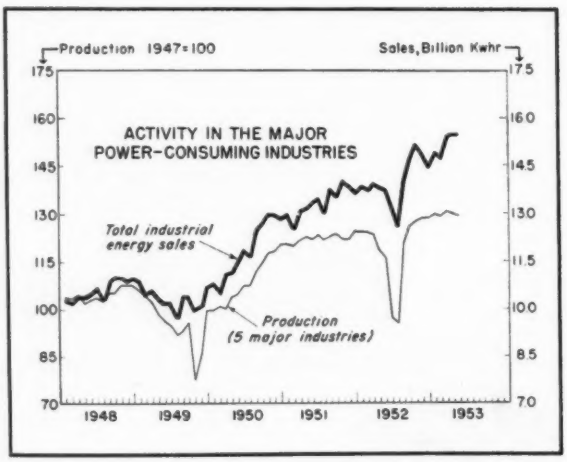
Magnesium Use Artifically High . . . Magnesium consumption is growing steadily. Today, use of magnesium is artifically high because of defense needs. At a lower level of defense, it might not be so high in 1963 as in 1952. The chart assumes primary production of 80,000 tons for 1963, as against more than 100,000 tons in 1952.

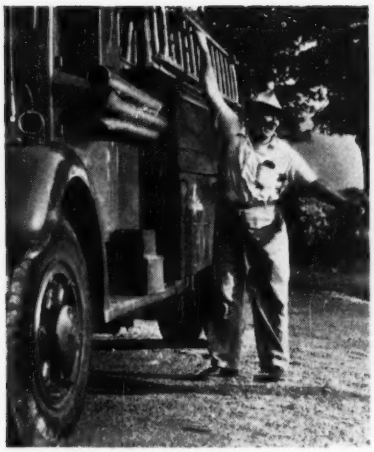
However, magnesium has a potential for much greater growth than this. New alloying techniques are being developed to give the metal greater strength and resistance to corrosion. If the cost of production can be brought down just a few cents a pound, magnesium consumption in 1963 could far surpass the chart estimate.

Titanium is still a minor metal in volume. Only about 1,100 tons of sponge were produced in 1952. It's still plagued with high cost (several dollars a pound) and with fabricating problems. But technical research on these problems is proceeding at a tremendous pace, and much progress will be made by 1963.

Any estimate of titanium consumption for future years is entirely speculative. The figure in the chart is based on 100,000 tons of titanium in 1963—which may be reasonable assuming some reduction in price. At 18 kwhr per pound (assuming 10% reduction in power requirements as a result of technical improvements) that would mean a power consumption of 3.6 billion kwhr.

As the figures above indicate, the light metal age will continue to belong mostly to aluminum for some years in the future. Magnesium and titanium have a long way to go before they can rival their sister metal's growth. But the possibilities in the other metals may, in the long run, be just as great.





"I say COPPER"

"I say ALUMINUM"

COPPER or ALUMINUM

which conductor shall it be?

"We both agree on ANACONDA"

It's not very strange that this sort of agreement is widespread today.

Cable customers vary in their needs. Some choose copper . . . some aluminum . . . some both.

To get the best results from either metal, consider carefully both sound engineering and good economics before deciding. Whatever *your* final choice – it will pay you to *specify Anaconda.*

Anaconda offers you a *single* source of supply for transmission and distribution conductors for every type of service. Modern manufacturing techniques are backed by many years of field-engineering and construction experience plus up-to-date metallurgical and development facilities. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 52475

Copper and Aluminum Insulated Cables
Copper and Aluminum Service Cables
Copper, Aluminum and Copperweld Bare and Weatherproof
Copper and ACSR Transmission and Distribution
Wire and Cable Accessories

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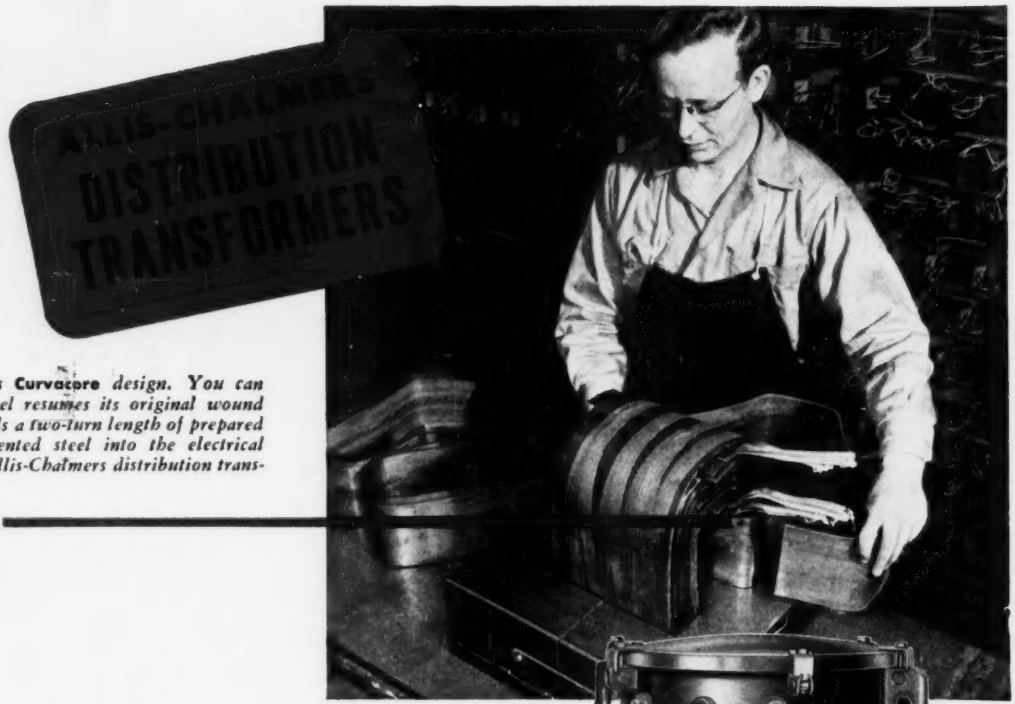
—choose with confidence when it's

ANACONDA® wire and cable

How CURVACORE Design Improves Transformer Performance



Picture illustrates **Curvacore** *design. You can see how core steel resumes its original wound shape as man feeds a two-turn length of prepared cold-rolled, oriented steel into the electrical windings of an Allis-Chalmers distribution transformer.*

Results in Low Exciting Current . . . Low Losses

Curvacore design fully utilizes the advantages of cold-rolled, oriented steel. First, steel is wound from a continuous strip of steel, shaped and annealed. The annealing process relieves mechanical stresses and sets the shape of the core. Then core steel is unwound, cut into two-turn lengths and nested in proper order for assembly around the coils.

Curvacore design permits the flux path to follow the grain of the steel. This results in high permeability, low hysteresis losses and a mechanically stronger core structure of less weight than previous design.

Better Regulation and Cooling

In addition, coils are arranged in low-high-low sequence which gives lower impedance resulting in better regulation characteristics. Liberal cooling ducts provide large contact areas between windings and oil to keep copper-to-oil gradient low.

As a result of careful design and manufacture, you get a compact, efficient transformer. And you get extra features like improved impulse strength, sealed tank construction, and excellent surface protection. For complete details, call your nearby A-C district office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

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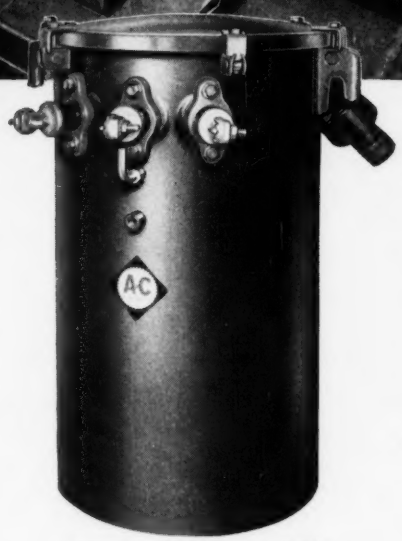

Curvacore *design is available in most distribution ratings.*

Curvacore is an Allis-Chalmers trademark.

ALLIS-CHALMERS